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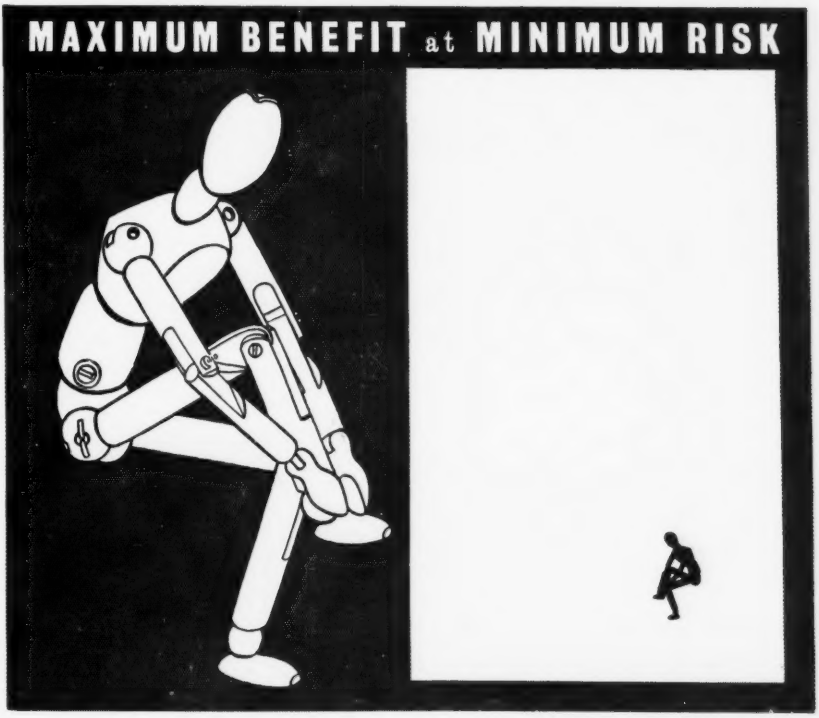

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ORIGINAL PAPER

METABOLIC DISEASES AFFECTING THE LOCOMOTOR SYSTEM

III. INVESTIGATIONS OF BIOCHEMICAL CHANGES IN OSTEOMALACIA AND OSTEOPOROSIS*

By JOHN ANDERSON

From the Medical Unit, King's College Hospital, London

THE differentiation between osteomalacia and osteoporosis may be possible from the history, physical examination, and radiological findings. However, these may be misleading in a small number of cases and biochemical investigations are useful in establishing the diagnosis and assessing the effectiveness of therapy. Those which can be carried out in the usual routine laboratory are estimations of the plasma calcium, plasma inorganic phosphorus, and plasma alkaline phosphatase concentrations, and of the 24-hour urinary calcium excretion. There are many ways in which errors can arise in these estimations, and a fair proportion of patients, in whom wrong deductions have been made because of laboratory errors, reach teaching centres.

PLASMA CALCIUM CONCENTRATION

Correct estimation of the plasma calcium concentration is very necessary. In most laboratories the plasma or serum calcium concentration should be in the range of 9·5 to 11 mg. per 100 ml. Plasma calcium concentrations below

* The last paper of a symposium presented at the Annual Meeting of the British Association of Physical Medicine, April 29, 1960. Papers I and II appeared in the August and November, 1960, issues.

9·0 mg. per 100 ml. are definitely low and indicative of calcium lack. On the other hand, calcium concentrations greater than 11·5 mg. per 100 ml. indicate definite hypercalcaemia. Errors often arise from the wrong method of collecting the blood. It must be borne in mind that the calcium concentration of tap water is higher than that of blood in many parts of Great Britain, especially in the London area, and thus all syringes when prepared should have a final rinse with distilled water before being autoclaved. If this is not done, then calcium deposits may coat the syringe and tend to dissolve in blood and produce an increased calcium concentration. Prolonged venous occlusion tends to raise the plasma calcium concentration (Philpot, 1958). There are variations in the plasma calcium concentration throughout the day of the order of 0·3 to 0·7 mg. per 100 ml., the largest rises being observed one to two hours after meals. In view of the variation in plasma calcium throughout the day it is wise either to take the blood in the fasting state before breakfast or just before lunch, when the rise following the first meal of the day has passed. Diet to a limited extent influences the plasma calcium concentration, a high-phosphate diet tending to lower the total serum calcium and a low-phosphate diet to increase it.

At the same time as the plasma calcium is determined the total serum protein and the concentration of albumin should be determined. About 40% of the total plasma calcium is bound to protein, and most of this is bound to albumin. If the albumin concentration is low, as in the nephrotic syndrome, the protein-bound calcium will be low and the total serum calcium will also be low, but the ultrafilterable and ionized calcium are probably normal. At the moment the determination of the ultrafilterable and ionized calcium is not a routine laboratory procedure, and its usefulness is still being investigated. Rose (1957) described a method which is rather complicated and requires about 30 to 40 ml. of blood. In osteomalacia the protein-bound calcium may be low as well as the total calcium, although the ionized calcium is usually normal or low depending on the state of the osteomalacia. If tetany is present the ionized calcium will be low, provided there is no respiratory disturbance. In osteoporosis the protein-bound calcium and the ionized calcium are normal. Lloyd and Rose (1958) reported that the protein-bound calcium is decreased in patients with parathyroid tumours who have a normal serum calcium, suggesting that one of the effects of parathyroid hormone is to decrease the calcium binding of the plasma protein. Hyde *et al.* (1960) did not find an alteration similar to this in their cases of primary hyperparathyroidism. Thus more work requires to be done to establish the correct parameters of these fractions of the total serum calcium and the influence of parathyroid hormone on them.

In osteomalacia the plasma calcium tends to be normal or in the low normal range early in the disorder, while the plasma inorganic phosphorus concentration has already fallen. It is thought that this is due to an increased secretion of parathyroid hormone which maintains the serum calcium con-

centration, but at the same time it lowers the renal threshold for phosphorus. As the osteomalacia progresses, for reasons not fully understood, the parathyroid fails to mobilize sufficient calcium from the bones and thus the total plasma calcium falls. Associated with this may be a decrease in the protein-bound calcium due to a failure to synthesize albumin, and this is associated with a low plasma albumin concentration. Thus there are several factors involved in the alteration of the total plasma calcium and its fractions in osteomalacia. In osteoporosis the levels of total plasma calcium, protein-bound calcium, and ionized calcium are within normal limits. In osteoporosis most patients usually have plasma calcium concentrations of 10 mg. per 100 ml. or more.

PLASMA INORGANIC PHOSPHORUS CONCENTRATION

The plasma inorganic phosphorus concentration must also be determined accurately. Blood should be collected into phosphate-free heparin, centrifuged, and separated from the plasma at once. If this separation is not done immediately, inorganic phosphate leaves the red cells and considerably increases the plasma inorganic phosphate concentration. As this is lowered in osteomalacia a misleading impression may be formed. The plasma inorganic phosphate concentration tends to rise after meals, so that blood is best taken during the fasting state. The plasma inorganic phosphate concentration tends to rise just before and during menstruation, and may give a false picture if blood is taken only at this time. In osteomalacia the plasma inorganic phosphorus concentration is usually below 3·0 mg. per 100 ml., and in the majority of patients it will be lower than 2·5 mg. per 100 ml.

The lower plasma inorganic phosphorus concentration is brought about mainly by the kidney, though malabsorption of phosphate from the gastrointestinal tract may be a factor. This can be measured by determining the renal tubular maximum reabsorptive capacity for phosphorus (Tm_P) (Anderson, 1955). The Tm_P is decreased in osteomalacia (Anderson, 1956; Hyde *et al.*, 1960). It is thought that this is due to increased parathyroid secretion, and later it is possible that vitamin-D lack also plays a part. Nassim *et al.* (1956) have also shown that sex hormones will influence the renal tubular reabsorption of phosphate. The plasma inorganic phosphorus concentration in osteoporosis is in the normal or high normal range. The tubular maximum reabsorptive capacity of the kidney for phosphate is normal in osteoporosis.

If inorganic phosphate is given by mouth in as large amounts as can be tolerated there is no healing of vitamin-D-resistant rickets, although the serum inorganic phosphorus concentration will rise to a more normal value. Thus supplying phosphate by itself will not heal vitamin-D-resistant rickets. Giving phosphate intravenously may be dangerous in patients with osteomalacia, for

calcium phosphate tends to be precipitated in the bones and irreversible tetany can easily be produced. Often the tetany arises several hours after a phosphate infusion, and it may be missed because the danger is then thought to be over.

PLASMA ALKALINE PHOSPHATASE CONCENTRATION

The plasma alkaline phosphatase concentration is often raised in osteomalacia, especially in the young, but not so often in the aged. Usually technical mistakes are rare with this estimation, but its value in diagnosis is not great. It is usually in the normal or low normal range in osteoporosis. Care has also to be taken in the interpretation of a raised concentration to exclude liver disorders and Paget's disease. If it is raised in osteomalacia the response to treatment can be determined using this as one of the criteria. In young children it is often 100 King–Armstrong units per 100 ml. or more, but in the adult the elevations are not so great and in the elderly there may be no significant rise of alkaline phosphatase. The reasons for the alteration in plasma alkaline phosphatase concentration are not fully understood. It is no doubt the resultant of a complex series of equilibria, of which the bones and the liver appear to play an important part. How it is secreted into bile is at present not known, and it may have important functions in the gastro-intestinal tract in relation to absorption.

24-HOUR URINARY CALCIUM EXCRETION

Estimation of the 24-hour urinary calcium excretion is often diagnostic. In osteomalacia a lowering of the 24-hour urinary calcium excretion occurs early in the disorder when the plasma calcium concentration may be still within the normal range. The normal 24-hour urinary calcium excretion is about 80 to 200 mg. In osteomalacia it will usually be less than 80 mg. For an accurate estimation the urine must be acidified to ensure that all the urinary calcium is in solution and none is adhering to the glass. The urine should be collected into acid-washed bottles only. Unless urine is collected into specially washed bottles it is not worth taking the trouble to estimate the 24-hour urinary calcium excretion, as the risk of contamination with extraneous calcium is high. The urine calcium concentration in osteoporosis is usually within the normal range. Early in the disorder the urine calcium may be raised, but this is usually missed as the disorder has passed the acute phase by the time X-ray changes are visible and symptoms marked.

The urine calcium can also be tested qualitatively using Sulkowitch's reagent; this is a buffered solution of oxalic acid. When added to urine it will precipitate calcium oxalate if sufficient calcium is present. To carry out the test 5 ml. of urine is placed in a test-tube and 2 ml. of Sulkowitch's reagent added.

The speed with which the precipitate appears and the degree of density of the precipitate are noted. In normal urine the precipitate occurs in two to three seconds and is at its maximum in about ten seconds and is not very dense. To some extent the result is variable depending on the degree of urine concentration. In osteomalacia there is virtually no precipitate within ten seconds, and frequently no precipitate can be detected at all. In hypercalciuria, such as may occur in the active phase of osteoporosis, the precipitate will occur immediately and will be dense and cloudy. In the chronic phase of osteoporosis the urine calcium will be normal.

CALCIUM INFUSION TEST

A calcium infusion test was suggested by Schilling and Laszlo (1951) as a useful diagnostic aid in osteomalacia, as it was thought to reveal the "avidity" of the skeleton for calcium. It was thought that urinary excretion of calcium following an intravenous infusion would be small in osteomalacia and great in osteoporosis. Kyle *et al.* (1954) and others have investigated this method and found it no more reliable than the standard estimations already described. Nordin and Fraser (1956) reported a modification of the test. As well as obtaining positive results in patients with osteomalacia, they found similar results in patients with steatorrhoea without bone disease and suggested that these patients had early osteomalacia. However, no follow-up of these patients has ever been published to show if they developed any of the other criteria of osteomalacia. In most of the patients the diagnosis could have been made on other criteria, and the usefulness of this test remains to be assessed in early osteomalacia when detailed follow-up studies are available. Also, for other reasons, vitamin-D-resistant osteomalacia was excluded from this series. Nordin and Fraser later reported that a 12-hour retention test does not separate osteoporosis from the normal range, and in a subsequent paper they describe a four-hour calcium retention test which gave a better separation of patients with osteoporosis and normal subjects, showing that the skeletal uptake was reduced in osteoporosis. However, by this time osteoporosis will be detectable radiologically, and it is doubtful if there is a great need for this type of test. It would be useful to know if this occurs earlier in the disease before there are any detectable radiological changes.

OTHER INVESTIGATIONS

In summary, with osteomalacia the plasma calcium concentration will tend to be low, the plasma inorganic phosphorus concentration will be low, the alkaline phosphatase will usually be raised, and the 24-hour urinary excretion of calcium will be low. In osteoporosis these tests are all within the normal range, except that the urine calcium may be high early in this disorder. In all

patients with osteomalacia the ability of the gastro-intestinal tract to absorb fat should be investigated, and if this is normal the urine should be screened for abnormal amino-acids to establish the aetiology of the osteomalacia.

Further facts about the metabolic state of a patient can be ascertained by carrying out a calcium balance test. However, this is not a practical proposition at most hospitals, because large errors can be produced by failures of organization and collection. This type of investigation is best carried out in special units equipped for the purpose. In a normal calcium balance the dietary intake of about 600 to 800 mg. of calcium a day will largely appear in the faeces, except for 100 mg. which will appear in the urine. The patient will be in a proximate calcium balance. In children who are growing, however, there will be a positive calcium balance continually if growth is proceeding. In patients with osteomalacia all of the dietary intake of calcium appears in the stool and there will be an additional small loss of calcium in the urine. These patients will usually be in negative calcium balance. Treatment with vitamin D or A.T.10 produces a rapid reduction in the faecal calcium and a rise of urinary calcium, the calcium balance rapidly becoming positive.

Dietary deficiencies of vitamin D will respond to 10,000 units or 0·25 mg. of calciferol or A.T.10 a day for a few weeks. However, most adult patients with osteomalacia develop resistance to vitamin D, and treatment should begin with doses of the order of 100,000 to 200,000 units of calciferol a day. This dose should be rapidly reduced at the end of four to six weeks, when the plasma calcium and phosphorus concentrations return towards normal, otherwise hypercalcaemia due to an excess of vitamin D will occur. The maintenance dose of calciferol will usually be of the order of 10,000 units or 0·25 mg. on each day or alternate days. Patients in whom the original disorder cannot be cured require biochemical supervision for the rest of their lives. The plasma calcium and inorganic phosphorus concentrations should be checked occasionally to see that there is no recurrence of the osteomalacia and that the dose of vitamin D is correct.

DISCUSSION

From the brief outline given above it will be obvious that there is a great deal we do not understand about osteomalacia and osteoporosis. It also becomes apparent that the theoretical concepts of the disorders require to be considerably modified to fit in even with the existing known facts. The present concept of the aetiology and pathology of both osteomalacia and osteoporosis has largely originated from the Albright school in Boston. Albright himself would have been the first to acknowledge that these were mainly working hypotheses to be used only as a basis for the further collection and elucidation of new facts.

First let us look at some of the difficulties in relation to osteomalacia. There is no doubt that lack of vitamin D is intimately connected with rickets in children and with osteomalacia in adults. There is a considerable bulk of evidence in both animals and man that it is necessary for the transport of calcium across the gastro-intestinal tract; that without it proper calcification of the bone matrix cannot take place; and also that it alters the tubular reabsorption of the kidney for calcium and phosphorus (Chu and Sung, 1940; Harris and Innes, 1931). Most of the actions of vitamin D have been deduced from balance data. There is also no doubt that its lack may be responsible for the irritability and asthenia that occur in patients with rickets or osteomalacia. However, it is difficult to determine whether these symptoms are related to vitamin-D deficiency or only to the calcium concentration of the blood. As yet no experiments on human beings have endeavoured to dissociate these two elements.

The phenomenon of vitamin-D resistance also requires further explanation. It seems likely that large doses of vitamin D are required to correct some other biochemical defect which is not entirely related to vitamin-D deficiency. Often patients with vitamin-D-resistant rickets are never completely fit and well even when treated adequately with large doses of vitamin D. They also run the risk of developing hypercalcaemia rather more readily than one would expect. There is no doubt, too, that they require a permanent maintenance dose of vitamin D if the recurrence of osteomalacia is to be prevented. It is difficult to establish whether the large doses of vitamin D are required mainly to transport calcium across the gastro-intestinal tract, as suspected by some, or whether they are necessary also to enable calcium to be laid down in the bones of these patients.

It seems likely that there is parathyroid hyperplasia early in this disorder, though the evidence is mainly indirect and based on plasma electrolyte concentrations. As yet no one has unequivocally demonstrated increased parathyroid activity directly in these patients. One problem that is difficult to understand is how secretion fails to maintain the normal concentration of plasma calcium when there appears to be still plenty of calcium in the skeleton. Clinically there are great variations in the response of the parathyroid to osteomalacia, and no explanation of these variations is at present satisfactory.

The occurrence of pseudo-fractures does not appear to be related to the activity of the parathyroid in this disorder. The problem of the appearance of pseudo-fractures in some patients has no solution, and undoubtedly all patients have arteries beating near the bone.

Cruickshank and Kodicek (1953) studied the distribution of vitamin D in the rat and later in man and showed that it is metabolized differently in each species. Much more work requires to be done on the distribution and action of vitamin D in man.

There has been increasing interest recently in idiopathic osteoporosis. Carttar *et al.* (1950) have shown that, when low-calcium diets are fed to rats, the amount of bone matrix laid down is reduced and gives rise to osteoporosis. Crawford *et al.* (1957) have confirmed this. Nordin (1959) has suggested that a similar mechanism may be present in man and that a great deal of the osteoporosis is dietary in origin. Only experiments on a long-term basis can substantiate this, but it is difficult to find patients with idiopathic osteoporosis who give a dietary history of taking less than 500 mg. of calcium a day. In a personal series of 10 patients with idiopathic osteoporosis, only four of them occasionally took less than 600 mg. of calcium a day, and these four have never had less than 500 mg. of calcium a day. None of them had any marked idiosyncrasies in the way of food intake, though some of them did not take a great deal of milk. Thus there was little evidence to suggest that they were in chronic calcium depletion. Nicholaysen *et al.* (1953) showed that prisoners could adapt to diets containing about 400–500 mg. of calcium a day, and did not report that they developed osteoporosis.

A more important aspect to be considered is that many patients who have osteoporosis usually have alterations of hormonal secretion. Osteoporosis is seen in Cushing's syndrome, and also in patients who have been treated with pharmacological doses of cortisone or cortisone-like drugs for some time. In these patients there is no doubt that the osteoporosis is related to the high steroid intake, and it is possible that other hormones, especially thyroid hormone in excess, produce this picture. Occasionally eunuchoid patients may have osteoporosis, and it has been thought that this is due to lack of androgens. Lack of oestrogens has been thought to be the cause of post-menopausal osteoporosis in the female. Thus it would appear that excess of certain hormones or hormonal imbalance consequent upon the menopause or old age may be an important factor in the aetiology of osteoporosis. Undoubtedly dietary factors, local alterations of circulation, and stress are also important.

It is apparent that new and better criteria are required to enable an adequate assessment of rates of skeletal accretion and loss to be evaluated. Our lack of knowledge of the hormonal processes controlling the formation and breakdown of Haversian systems in bone is great. The interrelationship of stress and local factors on the one hand and diet and hormones on the other is difficult to disentangle. Using new techniques employing isotopes, histology, radiography, metabolic studies, and tissue culture, attempts should be made to elucidate these problems.

The dangers in the past have been that many of our deductions are based solely on animal experiments and with little regard applied to man. Caution must always be exercised in applying the results of such an extrapolation without any supporting evidence. Unfortunately for us, the rat continues to grow throughout most of its life and develops rickets in situations which are not

applicable to man. Other difficulties arise in using other animals, for many respond differently to cortisone and oestrogens.

The study of the physiology and pathology of the skeleton must now be made on man. Techniques using isotopes have already been developed, but as yet have not been applied at many centres to study these disorders. Using ^{47}Ca, a short-lived isotope of calcium, it is possible to do experiments on man. Using a simultaneous ^{45}Ca and ^{47}Ca balance it is possible to assess the amount of calcium secreted into the gastro-intestinal tract, and also the total amount of calcium reabsorbed. This should improve our knowledge of the action of vitamin D and enable us to determine any effect it has on the secretion of calcium. By correlating the disappearance of ^{47}Ca from the blood with the uptake of this isotope by the bone Bauer *et al.* (1957) have shown that bone accretion rates may be determined. It ought to be possible to check this by autoradiography of undecalcified bone sections to see if the newly labelled Haversian systems are being laid down at a rate similar to that which is suggested by the bone accretion rate. It also may be possible to obtain further confirmation of this by incubating undecalcified sections of bone with ^{47}Ca and then performing autoradiography, thus avoiding the administration of radioactive isotopes.

The development of newer methods of assaying parathyroid hormone and determining the metabolism of vitamin D will, no doubt, go a great way in explaining many of the clinical problems. Only physicians can accept the challenge and apply these new techniques to study disease processes in man. In the past two decades our basic knowledge of many fundamental physiological processes in bone has increased enormously, but there has been a lack of advance in the application of these principles to the study of disease in man. I feel that the challenge is ours as physicians, and it is up to us to bring the benefit of these advances to our patients.

[*For the references to this paper please turn to page 33*

ORIGINAL PAPER

DEXAMETHASONE ESTERS IN INTRA-ARTICULAR AND SOFT-TISSUE INJECTIONS

BY MALCOLM THOMPSON

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THE use of steroid injections, either by injection into joint cavities or into extra-articular structures, is now well established in the treatment of many musculo-skeletal disorders. Various analogues of hydrocortisone—for example, prednisolone and halogenated prednisteroids—have been employed in attempts to find more potent preparations, and there is some evidence that prednisolone is superior to hydrocortisone, especially in the treatment of small joints (Thompson, 1957). The majority of the available preparations have been in the form of suspensions, the acetate and tertiary-butyl-acetate being the most common insoluble esters in use. A water-soluble compound, prednisolone 21 : phosphate, was used by Christie (1959) in intra-articular injections, but was generally not as effective as hydrocortisone acetate, having a rapid, albeit short-lived, effect. However, it was noted that temporary aggravation of pain, which occurred in 50% of the joints injected with hydrocortisone acetate, was found in only 25% of the patients treated with prednisolone 21 : phosphate. No reports have been published concerning the effect of water-soluble steroid preparations in the treatment of extra-articular musculo-skeletal disorders. It seemed possible that soluble compounds, by virtue of their greater diffusibility, more rapid action, and less irritant effect, could have some advantage over insoluble preparations in the treatment of extra-articular disorders. Possible disadvantages would be a shorter duration of effect and the risk of systemic side-effects due to the rapid passage of soluble steroids in the blood-stream.

The most potent steroid in clinical use is dexamethasone, and this paper is concerned with preliminary results of clinical trials of (*a*) dexamethasone tertiary-butyl-acetate supplied as "Decadron T.B.A.", a suspension suitable for intra-articular injection in a concentration of 4 mg. per ml.; and (*b*) a water-soluble ester of dexamethasone, "Decadron phosphate", 4 mg. per ml., suitable for intravenous, intramuscular, and intra-articular injections.

DECADRON TERTIARY-BUTYL-ACETATE

The value of this compound in a concentration of 4 mg. per ml. in intra-articular injections was assessed in relation to hydrocortisone acetate 25 mg. per

ml. and to prednisolone acetate 25 mg. per ml. The method of comparison adopted was the treatment of a series of patients each of whom presented with inflamed "paired" joints suitable for treatment with local steroid injections, and in whom the "paired" joints were clinically identical. To fulfil this standard it was essential that (*a*) the patient's own assessment did not indicate greater involvement of one joint; (*b*) joint circumference was approximately equal, within 5%; (*c*) joint tenderness was apparently equal; (*d*) ranges of joint movements were equal within 5%; and (*e*) there was no gross anatomical or radiological difference between the two joints.

A preselected order of injection was listed, and the first patient received Decadron T.B.A. to the joint affected on the right side and hydrocortisone T.B.A. to the left joint; the second patient received Decadron T.B.A. in the left joint and hydrocortisone into the right side; and so on. The contralateral joint was treated with the same volume of suspension in the concentrations stated above. After the injections the patients were assessed at weekly intervals until one of the treated joints relapsed. The injection syringes were prepared by a nurse assistant, who also kept the records of injections until the assessments were completed, so that the

TABLE I

DECADRON T.B.A. *v.* HYDROCORTISONE ACETATE: 16 PATIENTS WITH "PAIRED" JOINTS

Disease	Joints Affected	Pairs of Joints Injected
Rheumatoid arthritis	Knees	7
,, ,, ...	Ankles	4
,, ,, ...	Wrists	1
Osteoarthrosis	Knees	2
Gout	,,	1
Systemic lupus	,,	1

TABLE II

DECADRON T.B.A. *v.* HYDROCORTISONE ACETATE: COMPARISON IN 16 PATIENTS WITH "PAIRED" JOINTS

Preference	Relief of Pain	Joint Swelling	Tender-ness	Range of Movement	Duration of Relief	Patient's Preference
Decadron T.B.A. ..	12	11	13	9	8	12
Hydrocortisone acetate	1	1	1	1	1	1
No difference ..	3	4	2	6	7	3

trial was a "blind" one. The composition of the group of patients involved in the trial is shown in Table I. Sixteen patients were studied, affording a comparison of 32 treated joints. The results, shown in Table II, indicate a striking preference for Decadron T.B.A. by all criteria of comparison, both subjective and objective.

A similar study was then undertaken in respect of Decadron T.B.A. and prednisolone acetate 25 mg. per ml. Fifteen patients, affording a comparison in 30 joints, as shown in Table III, were treated. The results are shown in Table IV. Again a striking preference for Decadron T.B.A. is shown. No side-effects resulted from any of the injections in either of the series in these clinical trials.

TABLE III

DECADRON T.B.A. *v.* PREDNISOLONE ACETATE: 15 PATIENTS WITH "PAIRED" JOINTS

Disease	Joints Affected	Pairs of Joints Injected
Rheumatoid arthritis	Knees	8
,, ,, ...	Ankles	1
,, ,, ...	Wrists	2
,, ,, ...	Elbows	2
Osteoarthrosis	Knees	2

TABLE IV

DECADRON T.B.A. *v.* PREDNISOLONE ACETATE: COMPARISON IN 15 PATIENTS WITH "PAIRED" JOINTS

Preference	Relief of Pain	Joint Swelling	Tender-ness	Range of Movement	Duration of Relief	Patient's Preference
Decadron T.B.A. ..	10	9	11	9	9	10
Prednisolone acetate ..	1	1	1	1	1	1
No difference	4	5	3	5	5	4

DECADRON PHOSPHATE

A clinical trial of this soluble steroid in the treatment of extra-articular lesions by local injection was undertaken. In view of the difficulties involved in assessing the value of any treatment in a miscellaneous group of conditions which vary considerably in different patients, and from time to time in the same patient, the method adopted was to administer treatment to 30 consecutive unselected patients suffering from "soft-tissue" lesions for which local steroid injections had been advocated.

The composition of the group is shown in Table V. All the patients received treatment with one or more injections of Decadron phosphate to a total of 51 injections. Nineteen of these patients also had previously received, or subsequently received, local injections of hydrocortisone acetate to a total of 29 injections. The dosage of Decadron phosphate injected ranged from 1 mg. (0·25 ml.) in the treatment of digital inflammation associated with Heberden's nodes, to 12 mg. (3 ml.) in the treatment of pericapsulitis of the shoulder. No local anaesthetic was given with any of the injections.

TABLE V

PATIENTS TREATED WITH DECADRON PHOSPHATE INJECTIONS: 10 MALES AND 20 FEMALES AGED 18 TO 68

Condition	No. of Patients
Idiopathic pericapsulitis of shoulder	6
Post-traumatic pericapsulitis of shoulder	2
Chronic subdeltoid bursitis	2
Acute subdeltoid bursitis	1
Post-coronary pericapsulitis of shoulder	2
Traumatic lesion of subscapularis	1
Tennis elbow	4
Golfer's elbow	1
Carpal tunnel syndrome	7
de Quervain's stenosing tenovaginitis	2
Heberden's nodes with local inflammation	1
Calcaneal spur with plantar fasciitis	1
Total	30

In general, the results of local treatment with Decadron phosphate were highly satisfactory, and only one patient out of 30 failed to obtain any relief. Four patients who had previously received nine injections of hydrocortisone without any improvement obtained benefit from subsequent Decadron injections. In the present study two factors were examined: (*a*) the time of clinical response after injection; and (*b*) the incidence of post-injection pain. Data relative to these factors were listed in respect of the 29 local injections of hydrocortisone acetate and 51 injections of Decadron phosphate, and compared. Table VI indicates the extremely rapid relief obtained with Decadron phosphate, as all patients responding did so within 24 hours, and 86·2% of the group noted some relief of symptoms within six hours. This is a striking response in comparison with that obtained from injections of hydrocortisone acetate.

TABLE VI

TIME OF RESPONSE

Hydrocortisone Acetate (29 Cases)				Decadron Phosphate (51 Cases)			
Rapid	Average	Late	Nil	Rapid	Average	Late	Nil
0 (0%)	9 (31%)	11 (38%)	9 (31%)	44 (86·2%)	6 (11·8%)	0 (0%)	1 (2·0%)

Rapid response = within 6 hours; average response = 6 to 24 hours; late response = after 24 hours.

The incidence of local irritation, and its severity, were also compared in the two groups, and the results are shown in Table VII. It is seen that this troublesome complication, noted in 65·5% of patients treated with hydrocortisone acetate,

TABLE VII

LOCAL IRRITATION

Hydrocortisone Acetate (29 Cases)			Decadron Phosphate (51 Cases)		
Severe	Mild	Nil	Severe	Mild	Nil
15 (51·7%)	4 (13·8%)	10 (34·5%)	0 (0·0%)	4 (7·9%)	47 (92·1%)

occurred in 7·9% of the patients receiving Decadron phosphate, and then merely to a mild degree. In particular, the severe local irritation often experienced when hydrocortisone acetate is injected under tension was virtually non-existent when Decadron phosphate was used.

There was no evidence that duration of effect was shorter in patients treated with the soluble preparation, as when it proved to be effective in a self-limited or curable condition—e.g. "tennis elbow"—the benefit was fully maintained.

One patient, suffering from pericapsulitis of the shoulder, was given an injection of 12 mg. (3 ml.) of Decadron phosphate into and around the shoulder capsule. He developed a mild exacerbation of symptoms of an old duodenal ulcer three days following injection, and it is possible that systemic absorption of the injected steroid was responsible. His duodenal symptoms abated within a week with rest and alkali, but this example provides a warning of the need to consider systemic contraindications to local steroid therapy when substantial doses are being employed.

DISCUSSION

These preliminary studies indicate that dexamethasone has a potent anti-inflammatory effect when given by local injection. This was anticipated by knowledge of its chemical constitution, as all other hydroxylated steroids are locally effective. The results obtained in the trial comparing intra-articular Decadron T.B.A. suspension with hydrocortisone acetate were not unexpected, as each ml. of Decadron suspension contained 4 mg. of dexamethasone, which has a greater anti-inflammatory action than the 25-mg. hydrocortisone acetate suspension. Equivalent doses of dexamethasone and hydrocortisone in oral therapy are taken as 0·75 mg. to 20 mg., a ratio of approximately 1 to 25, and considerably less than the 1 to 6¼ ratio used in this trial.

With regard to Decadron phosphate versus prednisolone acetate, the advantage shown by Decadron was not so predictable on theoretical grounds. The systemic ratio of dexamethasone to prednisolone is taken as 0·75 mg. to 5 mg., a ratio of 1 to 7, and this would give the Decadron suspension only a slight advantage over prednisolone in the dosage ratio 1 to 6¼ used in this trial. It was by no means certain the ratio of 1 to 7 would be maintained, as previous experience with prednisolone and hydrocortisone had shown that the systemic ratio of the two drugs, 5 to 1, fell to 2½ to 1 when these compounds were compared in local injection therapy. Had there been a similar depreciation of the potency of dexamethasone in local use, then the concentration of 4 mg. per ml. suspension would not have been as effective as the 25 mg. per ml. suspension of prednisolone acetate. Indeed, the more favourable response to Decadron T.B.A. may be greater than that expressed in Tables II and IV, since in both trials the only preferences for hydrocortisone and prednisolone were expressed by one patient in each trial, and it may be that their intra-articular Decadron injections were not correctly sited or distributed in the joint space. Both the patients concerned have subsequently received intra-articular injections of Decadron T.B.A. with apparent benefit, indicating that they were not unresponsive to this compound.

Decadron phosphate has been shown to possess clear advantages over hydrocortisone in the treatment of extra-articular "soft-tissue" lesions. Some of these conditions are notoriously refractory to treatment—for example, subacute or chronic pericapsulitis of the shoulder—and only by comparison with larger series of patients can the value of this new steroid compound be determined in relation to previous local therapy. However, the results of this short trial are extremely encouraging and give evidence of a rapidly acting, non-irritant, and highly effective steroid in local injection therapy. Further studies of larger groups of patients treated for tennis elbow, pericapsulitis, and tenosynovitis are being made. The greater risks of systemic absorption and possible systemic side-effects from local injections of a soluble steroid must be borne in mind, and the maintained anti-inflammatory effect may be due in part to systemic action if doses in

excess of 2 mg. dexamethasone are given. The cost of larger doses of dexamethasone is a factor which may limit its use and dosage in extra- and intra-articular injection therapy, but satisfactory results have been obtained with preparations no more expensive than those in current use.

SUMMARY

The results of clinical trials of insoluble and soluble esters of dexamethasone have been reported. Dexamethasone tertiary-butyl-acetate 4 mg. per ml. in suspension was compared with hydrocortisone acetate 25 mg. per ml. in a "blind" controlled trial involving the intra-articular injection of 32 inflamed joints. By all criteria of assessment, including relief of pain, diminution of joint swelling, decrease in tenderness, increase in range of movement, duration of relief, and patient's own preference, dexamethasone T.B.A. was preferred. A similar result in favour of dexamethasone T.B.A. was obtained in a second "blind" controlled trial comparing this preparation with prednisolone acetate 25 mg. per ml. in the treatment of 30 inflamed joints. No side-effects were seen in either of these clinical trials.

The water-soluble phosphate ester of dexamethasone in a concentration of 4 mg. per ml. was used in the treatment of 30 patients suffering from extra-articular rheumatic disorders, and given in doses ranging from 1 mg. to 12 mg. A total of 51 soft-tissue injections was given. Speedy and adequately maintained relief was obtained in all but one patient. The results were superior to those obtained from 29 local injections of hydrocortisone acetate given to 19 of the patients in the group. Dexamethasone phosphate was notable for its rapidity of action, and freedom from severe local irritation so often encountered with hydrocortisone acetate.

The likelihood of greater systemic absorption of a soluble steroid is stressed, and attention drawn to the possibility of systemic side-effects if a large dosage is given.

ACKNOWLEDGMENTS

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REFERENCES

CHRISTIE, B. G. B. (1959) *Lancet*, **1**, 71.
THOMPSON, M. (1957) *Brit. med. J.*, **2**, 294.

ORIGINAL PAPER

THE WORK OF A HOSPITAL RESETTLEMENT CLINIC

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THE resettlement of disabled people in Great Britain took a great step forward when the Disabled Persons (Employment) Act was passed in 1944. This Act established a register of disabled persons; imposed a quota system of registered disabled on employers; provided means for industrial rehabilitation, or for sheltered employment where necessary; and established the D.R.O. (disablement resettlement officer) service.

Among the first hospital resettlement clinics were those started by Cooksey at St. Helier's, Carshalton, in 1946, and by Ferguson and McPhail at the Glasgow Western Infirmary in 1947. In the north-east of England the first hospital resettlement clinics were started by Palmer at the Queen Elizabeth Hospital, Gateshead, in 1949, and by Cowan at the Royal Infirmary, Sunderland, in 1950. The Durham group clinic was started in 1951; it serves one orthopaedic and two general hospitals and a population area of about 130,000.

ORGANIZATION OF THE CLINIC

The clinic is held once a month in the department of physical medicine at the Dryburn Hospital at 4 p.m. The physician in physical medicine acts as chairman, and in attendance are two group D.R.O.s, a number of D.R.O.s from neighbouring labour exchanges, the almoner, and the superintendent occupational therapist. The patient's own general practitioner is always invited and often attends. The information he can give is frequently valuable.

The great majority of patients seen are referred by various consultants in the group; very occasionally by general practitioners or D.R.O.s, but no patient is interviewed unless he or she has been recently medically examined at one of the hospitals of the group, as, in contrast to medical interviewing committees, no medical examination is done at the clinic.

The medical background having been presented, and added to, where necessary, by the almoner and the occupational therapist, the patient is personally interviewed. A plan is made to try to place him or her in a job that would be medically suitable, interesting, and likely to be obtained in the locality. On an average three patients are seen at each clinic, and, following this, those who have been interviewed at previous clinics are discussed and followed up

until resettlement. If there is any great delay in resettlement the patient may be personally interviewed a second time. The whole clinic takes only about an hour and a half.

RESULTS

During the three-year period 1956–9 91 patients were seen—82 men and 8 women (one twice). Their ages ranged from 18 to 62 years, most of them being between 31 and 50 (Table I). The diagnoses are shown in Table II, only the

TABLE I

AGE DISTRIBUTION OF 90 PATIENTS SEEN BETWEEN 1956 AND 1959

Age Group (Years)	No. of Patients
Up to 30	20
Up to 50	49
Over 50	21

Age span, 18–62 years

TABLE II

PRIMARY DIAGNOSIS

	No. of Patients
Diseases of the joints	28
Diseases of the lungs	19
Diseases of the heart	10
Diseases of the nervous system	10
Traumatic	9
Psychiatric	3
Miscellaneous	11
Total	90

primary diagnosis being included. There were far more cases from the medical than from the surgical departments. The results are seen in Table III. Ten patients were thought to be unfit or became so before resettlement; two were considered unemployable, and one left the district. Six patients were still undergoing vocational training, and two were at the industrial rehabilitation unit, at the time of completion of this survey. Of the remaining 70 patients available for resettlement, 42 (60%) had been resettled and 28 (40%) had not. Of those not resettled, 17 were Section 1 cases and 11 Section 2 cases. Resettlement was achieved (Table IV) within three months in nearly half the cases, and within six months in nearly four-fifths. The age at resettlement (Table V) shows a reasonably even spread throughout the three age-groups, the lowest proportional number placed (31%) being in the 31–50 year group. A follow-up of those

TABLE III

ANALYSIS OF RESULTS

	No. of Patients	
Unfit	10	
Unemployable	2	
Left district	1	
	—	13
Still under training	6	
At I.R.U.	2	
	—	8
Resettled	42*	
Not resettled	28†	
	—	70
Total		91

* Three in jobs at time of review.
† Section 1, 17 cases; Section 2, 11 cases.

TABLE IV

TIME TAKEN FOR RESETTLEMENT

Resettlement within	No. of Cases
3 months	18
6 months	13
9 months	4
12 months	2
Over 12 months	2
Total	39

TABLE V

RESETTLEMENT BY AGE GROUPS

Age at Resettlement (Years)	No. of Patients
Up to 30	11
Up to 50	15
Over 50	12
Total	38

patients who had been placed for three months or more was carried out by the group D.R.O., to find out if they were still employed. Of the 39 patients actually resettled through the clinic, 35 had been placed for more than three months. Two of these had died, two were unemployed owing to sickness, and only two were again unemployed though fit for work, thus leaving 29 (83%) still employed (Table VI).

TABLE VI

RESULTS OF FOLLOW-UP OF 35 PATIENTS PLACED FOR MORE THAN THREE MONTHS

	No. of Patients
Died	2
Unemployed because of sickness	2
Unemployed but fit	2
Still employed	29 (83%)
Total	35

Twenty-five patients went through the industrial rehabilitation unit. Adequate pre-vocational preparation and assessment are often possible with a good occupational therapy unit, but for those patients who may be suitable for vocational training, or in whom the willingness to work is in doubt, a period of assessment at an industrial rehabilitation unit is invaluable. More recently also Section 2 cases are being screened at the industrial rehabilitation unit before being recommended for Remploy. Vocational training was arranged for 12 patients. Their average age was 27, and only one man was over 40. Clerical training was the most popular choice (8 out of the 12). One man did not complete his course owing to unfitness, and 6 are still under training; of the remainder, 4 out of the 5 have been placed after completing their training. Great care is taken in vocational training not to recommend trades in which there is likely to be difficulty in local placement afterwards.

DISCUSSION

The proportion placed through the clinic (60%) accords closely with other published results. Thus, from London, Martin and Harris (1952) reported successful placement in about 58% of their cases; in Glasgow, Ferguson and MacPhail (1954) achieved success in 68%; Richardson and Weir (1956) from Aberdeen and Mair and Reid (1957) from Dundee, both reported successful placement in about half their cases. The figure of 60% placed is a gratifying one and a credit to the enthusiasm and efficiency of the D.R.O.s, for the main employment for men in the Durham area is in the collieries or in other forms of heavy labouring; and while there is an excellent resettlement scheme for injured miners (Zinovieff, 1958), the same does not apply to other disabilities. The gradual shrinkage of the coal industry and the lack of industrial development with factories make resettlement to lighter work infinitely more difficult in this area.

The number not resettled (28, or 40%) at first seems to be a big one, but this is an example of figures being misleading. As already stated, this number is

made up of 17 Section 1 cases and 11 Section 2 cases. Of the 17 Section 1 patients, 4 have overtly refused to co-operate and 8 are in a state of what might be best described as "disguised availability". They are mostly people who for one reason or another are either very fussy about the work that they would be willing to undertake or else prefer not to work. The majority have been unplaced for over a year, and, though they have to be kept on the register, no effort is being made to get them placed. The following examples are illustrative of these cases.

A man of 40, an open-cast miner with a spinal fusion, whose allowances while he is off work amount to over £10 per week.

A man of 29, a builder's labourer with a lumbar disk lesion, who is in receipt of a disability allowance of £12 per month from his firm while he is on the sick list.

A man of 39, a miner with an injured back, who is awaiting settlement of a negligence claim.

A woman of 45, a housewife with rheumatoid arthritis, who wants only part-time work as a receptionist, as she has not enough to do at home.

In this group as a whole there are in fact only 3 patients out of the 17 who are really keen to work but are yet unplaced.

Of the 11 Section 2 cases, 4 did not want to be considered for employment in a Remploy factory and one was refused by a factory, thus leaving only 6 cases available for placement. Here, however, there is a very definite bottleneck in this area, for during the three-year period of this survey it has not been possible to get one patient placed in a Remploy factory. The only exception to this was a Section 1 case, a woman of 45, a factory worker with Raynaud's disease and psychoneurosis, who was incorrectly reclassified elsewhere to Section 2. The placement of pseudo-Section-2 cases in Remploy factories is obviously a practice to be deplored. Other factors which make placement in Remploy in this area difficult are the geography of these factories, the lack of intake, the relatively small number of sedentary jobs available in them, and the type of work being done, which does not lend itself easily to the employment of severely disabled people. All these things, coupled with the present Remploy policy of productivity above everything else, prevent the organization from successfully achieving its primary objective of providing sheltered employment for severely disabled people. Vigorous efforts are now being made to persuade the Ministry of Labour to open a suitable Remploy factory within the area served by the Durham and North-West Durham Disablement Advisory Committees of the Ministry of Labour. One might add that, in common with most other local authorities in the country, our own have not done anything to provide sheltered workshops for disabled people other than the blind under the permissive powers they have had for some time under the National Assistance Act. The Piercy Committee (1956) recommended that these powers should

be more used, but that they should be transferred to the Disabled Persons (Employment) Act, and this was done in 1958.

In conclusion, the over-all results confirm that a resettlement clinic is a useful part of the hospital rehabilitation organization. It does not take much time, and provides the opportunity for study of the patient's medical, social, and vocational background previous to planning resettlement, after personal discussion of the problem with the patient and his own doctor. The subsequent follow-up provides continued stimulus and incentive to the D.R.O.s to get their patients placed as soon as possible—a stimulus often lacking in the absence of such an organization.

SUMMARY

The organization of a hospital resettlement clinic is described. Details of the patients seen during a three-year period and the results obtained are given. Resettlement was achieved in 60% of cases. On follow-up 83% were still employed. Some problems of resettlement are discussed.

ACKNOWLEDGMENT

I should like to express my thanks to all the D.R.O.s who have been responsible for the placements achieved, especially to Mr. Marshall, Group D.R.O., who was also responsible for the follow-up. My thanks are also due to Dr. J. G. Parish for helpful suggestions in preparing this paper.

REFERENCES

FERGUSON, T., and MACPHAIL, A. N. (1954) *Hospital and Community*. Oxford University Press, London.

MAIR, A., and REID, J. J. A. (1957) *Scot. med. J.*, **2**, 467.

MARTIN, A. J., and HARRIS, R. (1952) *Proceedings of the International Congress of Physical Medicine, London*, p. 72.

Piercy Committee (1956). *Report of the Committee of Enquiry on the Rehabilitation, Training and Resettlement of Disabled Persons*. H.M.S.O., London.

"Resettling the Disabled" (1958). Leading article, *Brit. med. J.*, **1**, 818.

RICHARDSON, I. M., and WEIR, R. D. (1956) *Rehabilitation*, **17**, 2.

ZINOVIEFF, A. (1958) *Ann. phys. Med.*, **4**, 255.

CLINICAL REPORT

A CASE OF RHEUMATOID ARTHRITIS WITH GENERALIZED LYMPHADENOPATHY AND SYNOVIAL CYST OF THE HIP-JOINT

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MARKED interest in the systemic nature of rheumatoid arthritis (rheumatoid disease) in recent years has prompted this report of a case of rheumatoid arthritis with generalized lymphadenopathy, especially as the presence of a synovial cyst in an unusual site increased the diagnostic difficulties encountered.

Amongst adults with rheumatoid arthritis about one-third may be found to have enlarged lymph-nodes (Short *et al.*, 1957) varying from small pea-sized structures to sizable nodes of 2–3 cm. These normally attract attention at the recognized sites of discernible lymph-node enlargement and are painless, not tender, discrete and freely movable under the skin. The histological picture is that of non-specific reactive hyperplasia, usually more marked than that associated with chronic inflammation (Cruickshank, 1958), and distinction from neoplastic proliferations may be difficult (Motulsky *et al.*, 1952).

Other swellings, usually cystic, found not infrequently in the vicinity of rheumatoid joints are of synovial origin. They are especially common around the knee-joint, but few references to such swellings in connexion with the hip-joint have been found in the literature (Coventry *et al.*, 1959).

CASE REPORT

A 52-year-old maintenance engineer was admitted to hospital in May, 1953, with acute rheumatoid arthritis. As he failed to respond to conservative measures, corticotrophin was given until May, 1954, and then cortisone (75-100 mg. daily) was substituted. Cortisone therapy was continued until July, 1957, when he was readmitted because of inadequate response and evidence of hypercortisonism. His general condition was good: weight 11 st. 3 lb., haemoglobin 13·5 g. per 100 ml., erythrocyte sedimentation rate (Westergren) 67 mm. in 1 hour. Cortisone was gradually withdrawn over a period of one month and the patient was discharged in October, 1957.

FIRST READMISSION

In January, 1958, anorexia, loss of 13 lb. in weight, and a fall in haemoglobin level to 9·7 g. per 100 ml., without evidence of increased joint activity, led to his readmission. Clinical examination revealed a pale, ill man with evidence of recent loss

of weight (9 st. 9 lb.) and low pyrexia (up to 99·5° F.). The condition of the joints was in keeping with Stage 3 rheumatoid arthritis (Steinbrocker classification, 1949) with a moderate degree of activity. Subcutaneous nodules were present over the ulnae and tibiae. No abdominal masses or organs were palpable, but the supraclavicular, axillary, epitrochlear, and left inguinal lymph-nodes were moderately enlarged (up to 3 cm.), discrete, mobile, firm, and not tender. A smooth, firm, rounded mass (9× 5 cm.), which transmitted pulsation from the femoral artery, was present in the right groin.

INVESTIGATIONS

The iron-deficiency anaemia and raised erythrocyte sedimentation rate have already been mentioned. Serum albumin was decreased, with an increase in α and γ globulins. No L.E. cells were found. The Rose–Waaler test was positive. Tests for infectious mononucleosis, syphilis, and lymphogranuloma inguinale were negative. There was no albuminuria and no faecal occult blood. Chest radiographs were normal, and skeletal survey revealed only changes in keeping with chronic rheumatoid arthritis. Barium follow-through studies suggested a persistent filling defect in the region of the lesser curvature of the stomach $2\frac{1}{2}$ inches below the cardia. In the absence of abnormal gastroscopic findings the filling defect was attributed to external pressure from enlarged para-aortic lymph-nodes.

Bone-marrow smears showed slightly increased cellularity with normal erythropoiesis and granulopoiesis. Megakaryocytes were numerous and showed active platelet formation. There was a slight increase of the cells of the reticulum, shown by increased proportions of histiocytes and especially plasma cells. The plasma cells were of normal morphology and did not suggest "myeloma cells". No Reed–Sternberg cells were seen. The appearances were compatible with a diagnosis of rheumatoid arthritis and of Hodgkin's disease—though in no way diagnostic of the latter condition.

Lymph-node biopsy.—Histological examination of biopsy material from the left axilla and right groin consisted of enlarged lymph-nodes (up to 2×3 cm.) showing preservation of normal architecture. The lymphoid follicles were large, and almost all of them contained active, prominent germinal centres. The sinus-lining cells were hyperplastic, and the crowding of the pulp tissue of the lymph-nodes with plasma cells was a striking feature (Plate I, Fig. 1).

PROGRESS

With rest in bed and symptomatic treatment his general condition improved; his weight increased to 9 st. 12 lb. and the haemoglobin to 12·8 g. per 100 ml., and the E.S.R. fell to 62 mm. in 1 hour. He was discharged in April, 1958, a provisional diagnosis of lymphoid hyperplasia associated with rheumatoid arthritis having been made. This diagnosis was supported by follow-up findings in July, 1958, when further improvement in general state and slight regression of lymph-nodes, without significant change in joint condition, were noted.

Second Readmission

He was readmitted in July, 1959, with enlargement of the inguinal mass, which had become painful. It was still considered to be glandular. The patient's general

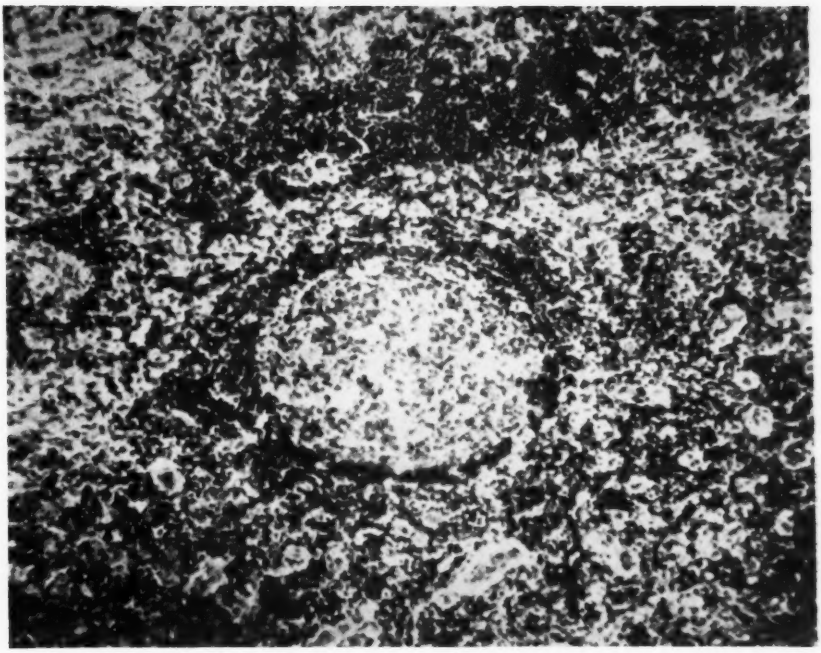

FIG. 1.—Lymph-node showing follicular reactive hyperplasia. The medulla is heavily infiltrated with plasma cells. (H. and E. × 150.)

FIG. 2.—Antero-posterior radiograph of pelvis showing narrowed joint space of right hip with the overlying synovial cyst outlined with contrast medium.

C.F. facing page 24]

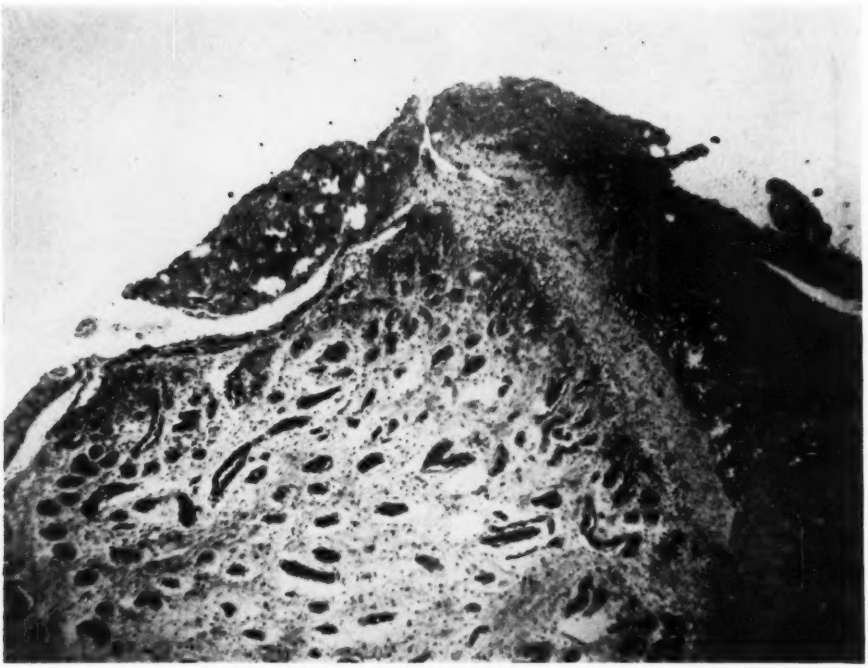

FIG. 3.—Synovial villus projecting from cyst wall, partly covered with fibrin, the deeper layers of which are undergoing organization. (H. and E. ×28.)

health was good (weight 10 st., haemoglobin 13·6 g. per 100 ml., E.S.R. 35 mm.), with low-grade rheumatoid activity in the left shoulder, knees, ankles, and right hip. Radiographs of the right hip-joint showed a moderate degree of joint-space narrowing. Only on direct questioning was it discovered that pain in the groin-swelling was closely related to hip movements. A subsequent attempt at aspiration of the swelling was unsuccessful, but it was possible to inject 20 ml. of 40% Hypaque solution, which outlined the swelling without demonstrating a communication with the hip-joint (Plate I, Fig. 2).

Operation (Mr. Daintree Johnson) revealed a thick-walled cyst under the superficial fascia just lateral to the femoral artery. It was packed tightly with "melon-seed" bodies and its deep extension communicated with the hip-joint. After emptying it the sac was excised.

Histological Report.—The wall of the cyst consisted of fibrous tissue lined with granulation tissue. The contents were composed mainly of fibrin showing organization at the periphery, and the "melon-seed" bodies were found to be synovial villi covered with fibrin (Plate I, Fig. 3).

DISCUSSION

Lymphadenopathy associated with rheumatoid arthritis is not uncommon (Short *et al.*, 1957). The clinical and especially the histological findings have been reviewed by Motulsky *et al.* (1952) and Cruickshank (1958). These authors regard the lymph-node changes as another feature of the systemic involvement in rheumatoid arthritis (rheumatoid disease), and not necessarily related to local joint and visceral lesions. In the case reported here, findings such as hyperglobulinaemia, plasmocytosis of the bone-marrow, subcutaneous nodules, and anaemia provided ample evidence of the systemic nature of the disease.

Most of the accounts in the literature deal with diagnostic difficulties based on the histology of affected lymph-nodes. The main lesions described are follicular hyperplasia and sinus catarrh, either alone or in combination (Parkes Weber, 1944; Motulsky *et al.*, 1952; Cruickshank, 1958). The lesions may resemble those of giant follicular lymphoma (Parkes Weber, 1944; Farreras Valenti, 1947; Motulsky *et al.*, 1952; Cruickshank, 1958). Less commonly Hodgkin's disease (Poursines and Rochu, 1946; Motulsky *et al.*, 1952), lymphosarcoma (Motulsky *et al.*, 1952), and chronic lymphatic leukaemia (Cruickshank, 1958) may be simulated. Increase in plasma cells in lymph-nodes and marrow is a recognized feature of rheumatoid disease (Hayhoe and Robertson Smith, 1951; Aherne, 1958), but marked marrow infiltration may result in confusion with myelomatosis.

In the case described diagnostic difficulties were caused more by the clinical than the histological findings. The initial picture of deterioration in general health (marked and persistent anorexia, loss of weight, increasing anaemia), generalized lymphadenopathy, a mass in one groin, and radiological evidence of a filling defect in the stomach, apart from suggesting malignant

disease, led to the consideration of a number of different diagnoses. As the barium-meal findings were subsequently attributed to pressure from enlarged para-aortic lymph-nodes, it is noteworthy that Cruickshank (1958) mentions two cases of rheumatoid arthritis showing involvement of visceral nodes only.

A number of varied and unrelated but fairly common conditions are first considered in the diagnosis of an inguinal swelling. The presence of a cystic swelling arising from the hip-joint or one of its related structures is usually not considered because of the rarity of such lesions. In the case described the presence of enlarged lymph-nodes in other sites and the firmness of the inguinal swelling suggested a lymph-node pathology. Most descriptions in the literature are of cysts attributed to traumatic, infectious, or spontaneous communication of an enlarged ilio-pectineal bursa with the adjacent hip-joint (O'Connor, 1933; Finder, 1938; Stephens, 1944; Hucherson and Denman, 1946; Witter and Swingle, 1957). Finder mentions the presence of arthritis, presumably degenerative, and O'Connor of ankylosing spondylitis. The descriptions of ilio-pectineal bursitis suggest that it is identical with synovial cyst of the hip. Ganglion cysts attributed to cystic degeneration of connective tissue (and not containing synovial tissue) have also been described (Cook, 1952; Herrington and Edwards, 1955).

The first clear description of synovial cyst of the hip in rheumatoid arthritis is by Coventry *et al.* (1959). Their three cases had several features in common with the case described here. The patients were all over the age of 55, and had long-standing, extensive, active disease with evidence of involvement of the hip-joint on the side of the cyst. In two of the three cases steroid therapy is mentioned, one showing marked evidence of chronic hypercortisonism.

Coventry and his associates describe two causative mechanisms. Overproduction of synovial fluid in a rheumatoid joint results in distension of the capsule, which is thin antero-medially or sometimes communicates with the overlying ilio-pectineal bursa. The capsule may be further weakened by secondary degenerative changes, and the age of the patients in the cases described suggests that this factor may be of some importance. Alternatively, the ilio-pectineal bursa, which sometimes communicates antero-medially with the hip-joint (Chandler, 1934), may become involved in the rheumatoid process, with overproduction of synovial fluid and villous proliferation of the bursal lining. In the absence of direct communication between bursa and hip-joint, such a channel may be produced as a result of the inflammatory and degenerative changes present.

SUMMARY

A case of rheumatoid arthritis with generalized lymphadenopathy and a synovial cyst of the hip-joint is described. The possible clinical and histological

difficulties of differential diagnosis are discussed. Attention is drawn to lymphadenopathy as part of the systemic involvement in rheumatoid arthritis. Factors which have been reported to contribute aetiologically to the production of rheumatoid synovial cyst of the hip-joint are mentioned.

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REFERENCES

AHERNE, W. A. (1958) *J. clin. Path.*, **2,** 326.
CHANDLER, S. B. (1934) *Anat. Rec.*, **58,** 235.
COOK, T. D. (1952) *Surgery*, **32,** 129.
COVENTRY, M. B., POLLEY, H. F., and WEINER, A. D. (1959) *J. Bone Jt Surg.*, **41A,** 721.
CRUICKSHANK, B. (1958) *Scot. med. J.*, **3,** 110.
FARRERAS VALENTI, P. F. (1947) *Rev. espan. rum.*, **2,** 273.
FINDER, J. G. (1938) *Arch. Surg.* (*Chicago*), **36,** 519.
HAYHOE, F. G. J., and ROBERTSON SMITH, D. (1951) *J. clin. Path.*, **4,** 47.
HERRINGTON, J. L., and EDWARDS, L. W. (1955) *Ann. Surg.*, **142,** 900.
HUCHERSON, D. C., and DENMAN, F. R. (1946) *Amer. J. Surg.*, **72,** 576.
MOTULSKY, A. G., WEINBERG, S., SAPHIR, O., and ROSENBERG, E. (1952) *A.M.A. Arch. intern. Med.*, **90,** 660.
O'CONNOR, D. S. (1933) *Surg. Gynec. Obstet.*, **57,** 674.
PARKES WEBER, F. (1944) *Ann. rheum. Dis.*, **4,** 3.
POURSINES, Y., and ROCHU, P. (1946) *Rev. Rhum.*, **13,** 129.
SHORT, C. L., BAUER, W., and REYNOLDS, W. E. (1957) *Rheumatoid Arthritis*, p. 312. Cambridge, Mass.
STEPHENS, V. R. (1944) *Arch. Surg.*, **49,** 9.
WITTER, J. A., and SWINGLE, N. E. (1957) *Amer. J. Surg.*, **94,** 653.

REVIEW SERIES

THE LEGISLATIVE BASIS OF REHABILITATION

By A. P. H. RANDLE

From Garston Manor Medical Rehabilitation Centre

FROM the earliest days of the Church the care of the sick, needy, and homeless was accepted as one of the Christian duties. The monasteries of England, aided by the medieval manor-houses and guilds, carried on this work until their dissolution in the sixteenth century.

To their everlasting credit, the Elizabethan Parliament recognized that this duty now rested with them, since the State had taken over the Church. The Poor Law Act of 1601 laid upon parish communities the duty of looking after their poor and infirm, for which they must raise a poor rate. The local Justices of the Peace administered the system under the central control of the Privy Council. The admirable principle was laid down that when work was not available for the indigent the local authority was to provide it and, if necessary, buy raw materials for the purpose. ("A convenient stock of flax, hemp, wool, thread, iron and other stuff to set the poor to work"—Statute of 1601.) Considering the times, this was an excellent system, and it worked well for some 150 years while the central control of the Privy Council remained strong. It is often forgotten that both training and sheltered workshops were opened in Ipswich and Norwich during the seventeenth century.

The eighteenth century saw a tremendous growth of private philanthropy. Between 1720 and 1750 eleven of London's great teaching hospitals were founded, though hospitals too had originated in the monasteries, such as St. Bartholomew's in Smithfield for the sick and bedridden.

With the growth of the industrial revolution in the nineteenth century and the lack of power and central drive from the Privy Council, the old Poor Law system began to break down. The Poor Law was reformed and placed under the control of the Poor Law Commissioners in 1834. They went about their task more in the spirit of Benthamite philosophy than with Christian compassion, with the result that families were split up and the Poor Law and the workhouses became among the best-hated objects in the land. To aggravate the situation the magistrates at Speenhamland in 1795 had shirked their traditional responsibility of fixing a wage in relation to the price of bread. Instead, contrary to common usage, they subsidized the price of bread out of parish rates and so pauperized most of the agricultural population.

BIRTH OF STATE SOCIAL SERVICES

With the twentieth century the idea was gaining ground that the social services should not be regarded as a form of charity, but should rank with justice and defence as one of the benefits that the State should provide. Thomas Jefferson had said around 1776 that what man could not do for himself the State should undertake. This idea of the social services did not come to be accepted until after the second world war, but the foundations were established by the Old Age Pensions Act, 1908, and the National Insurance Act, 1911. Employment exchanges were founded in 1910. In 1917 Sir Pendrill Varrier-Jones set up the first village settlement for the tuberculous, which was later transferred to Papworth. During the first world war the military hospitals, organized by Robert Jones, provided a rehabilitation regime, but this was discontinued after the war ended. Between 1919 and 1939 the local authorities assumed additional responsibilities for the care of the blind, crippled, and chronic unfit. Under the provisions of the Local Government Act, 1929, the hospitals administered by the Poor Law Boards of Guardians passed to the major local authorities. By the outbreak of the 1939 war two-thirds of the hospital beds in the country were administered by the local authorities. The Emergency Medical Service set up during the war was really the beginning of a National Hospital Service.

The Beveridge Report of 1942 published recommendations resting on three prerequisites: (1) a system of children's allowances; (2) comprehensive health and rehabilitation services for all; and (3) the avoidance of mass unemployment. It also laid down three principles: (1) future proposals should be guided, not fettered, by the past; (2) the organization of social insurance should be treated as one part only of a comprehensive policy of social progress; and (3) social security must be achieved by co-operation between the individual and the State.

The deliberations of the Tomlinson Committee in 1942 led to the passing of the Disabled Persons (Employment) Act of 1944. This Act regularized, modified, and extended the scheme by which the disabled and war casualties were rehabilitated, so that they could make the maximum contribution to the war effort. This Act was supplemented by another in 1958.

After 1945 a whole series of Acts were passed which reorganized the social services. The National Insurance Act, 1946, which came into effect in July, 1948, and the National Insurance (Industrial Injuries) Act, 1946, which became effective in 1948, replaced the old insurance and workmen's compensation schemes. The National Health Service Act, 1946 (also effective in 1948), established the Health Service, and the National Assistance Act, 1948, finally replaced the old Elizabethan Poor Law. Some of these Acts must now be considered in more detail.

THE NATIONAL HEALTH SERVICE ACT

The National Health Service Act aims to "promote the establishment in England and Wales of a comprehensive health service designed to secure improvement in the physical and mental health of the people of England and Wales and the prevention, diagnosis, and treatment of illness, and for that purpose to provide or secure the effective provisions of services". These include the general-practitioner services, the local authority services, and the hospital service. The decision whether a patient requires rehabilitation is in the hands of the family doctor or hospital specialist.

The facilities provided by different Regional Hospital Boards and Boards of Governors vary greatly from area to area; the central authority has not yet laid down minimum standards. The local authority can provide home nursing and home help facilities under this Act, but again the availability of these services varies from area to area. Necessary appliances are supplied either by the hospital service or by the local authority. Unfortunately, however, no definite dividing-line has been laid down by the Ministry of Health regulations, and this gives rise to unnecessary delays whilst argument proceeds over whose is the responsibility.

The National Assistance Act, 1948, for the first time provided a single comprehensive scheme of financial assistance out of Central Government funds. The sole qualification for assistance is need, general standards governing which are laid down in regulations approved by Parliament. These are revised from time to time in accordance with cost-of-living trends. At the present time the number of people of working age who receive assistance is falling steadily, while the number of old people receiving assistance is rising. The National Assistance Board is required to discharge its functions in a manner which will best promote the welfare of applicants for help. Therefore it is important that the Board be given a full medico-social report. Where medical reasons exist the Board is empowered to provide grants for extra nourishment, fuel, and clothing.

The provision of welfare services under this Act is the responsibility of the major local authorities (county and county borough councils in England and Wales, and large burghs in Scotland). These services include residential accommodation for the aged and infirm and those in urgent need of housing. At the end of 1958 the local authorities were responsible for the care of 39,417 physically or mentally handicapped and infirm persons. These included 16,535 physically handicapped old people, 3,291 other physically handicapped, and 5,469 mentally handicapped people.

THE DISABLED PERSONS (EMPLOYMENT) ACTS

Under the Disabled Persons (Employment) Acts, 1944 and 1958, local authorities have permissive power to make extensive provision for the disabled.

This extends from carrying out alterations in the individual home to providing sheltered workshops (Section 3 of the 1958 Act). The services provided vary greatly as between the different authorities. While some have sheltered workshops and social clubs, others fail even to instal a hand-rail for bath or lavatory, and it is time welfare services were made mandatory and minimum standards laid down.

The Disabled Persons (Employment) Acts empower the Minister of Labour to provide industrial rehabilitation and vocational training. They also permit him to "designate" occupations for the disabled (only two—car-park attendant and passenger-lift attendant—have actually been designated). The Acts also impose an obligation on all employers of 20 or more workers to employ a quota (now 3%) of disabled persons, and give the Minister power to place severely disabled persons in employment under sheltered conditions. A disabled person is defined as one who, "on account of injury, disease or congenital deformity, is substantially handicapped in obtaining or keeping employment, or in undertaking work on his own account of a kind which, apart from that injury, disease or deformity, would be suited to his age, experience and qualifications".

Each employment exchange maintains a register of disabled persons in its area, and there is a Disablement Resettlement Officer (D.R.O.) at each exchange. The D.R.O. keeps in touch with local employers and thereby finds suitable placings for the disabled on his books. He will also visit hospitals and attend clinics if asked. Good liaison between hospital and D.R.O. is essential if rehabilitation is to be a continuous process; patients requiring his services should certainly be seen before discharge from hospital.

INDUSTRIAL REHABILITATION UNITS

The first Industrial Rehabilitation Unit was opened at Egham, Surrey, in December, 1943. This was as a result of recommendations in the report of the Tomlinson Committee, 1943, which recommendations were embodied in the Act of 1944. There are now 15 industrial rehabilitation units. On being sent to an I.R.U. patients should not be in need of further medical treatment beyond a short period of general exercise daily. Those who require more extensive treatment or are not yet fit should either be treated in their own hospitals or be sent to a medical rehabilitation unit until they are ready for admission to an I.R.U. Courses at I.R.U.s must not extend beyond 12 weeks, and usually last eight weeks. The unit at Egham is a residential centre and can provide personal assistance for those patients who require it.

The Industrial Rehabilitation Unit makes a full assessment of a patient's aptitudes and abilities, so that he can be guided to the most suitable work. In cases where this is necessary the I.R.U. sends the patient on to one of the 14 Government Training Centres. Over 100 trades are available in these centres. To

be eligible for this scheme the patient must (*a*) be disabled as defined in the Acts, but not necessarily registered as disabled; (*b*) need training to render him competent to undertake suitable work; and (*c*) have a good chance of obtaining and keeping a job under normal working conditions after the training has been completed. These training courses are recognized by the various trade unions concerned.

The Ministry of Labour will, in special cases, pay for a course at a technical or commercial college, or send the severely disabled to special centres such as Queen Elizabeth's Training College at Leatherhead.

SHELTERED EMPLOYMENT

Sheltered employment for the severely disabled is provided in three ways. The first of these is Remploy Ltd., a corporation set up by the Ministry of Labour, which has some 96 factories scattered over the country. There is a waiting list of about two years for vacancies. The second is through local authorities and voluntary organizations acting as their agents. Local authorities have been responsible since 1920 for providing sheltered employment for the blind. They also have the permissive power to do this for all severely disabled people living in their areas. This power is derived from Section 29 of the National Assistance Act, 1948, and continued in Section 3 of the Disabled Persons (Employment) Act, 1958. Disappointingly few of the local authorities used these powers. The third means is authorized voluntary undertakings. At the end of 1959 there were 22 such organizations with a total of 28 workshops approved by the Ministry of Labour.

The above three types of organization give employment to some 12,000 people, while about 5,000 registered disabled persons are unemployed. The over-all total of those who would benefit from sheltered work is not known, because for various reasons they have not been registered as disabled persons and have thus not been brought to the notice of the Ministry of Labour.

CONCLUSION

This account of the legislative basis of rehabilitation shows that at the present time ample powers for the purpose have been provided by the State. If adequate services for medical rehabilitation are not available in some areas, then the fault lies with the hospital authorities for that area. The same applies to industrial rehabilitation facilities and the Ministry of Labour.

If most local authorities do not seem to be providing enough sheltered workshops, social clubs, and other welfare facilities, it is the responsibility of each one of us in our capacity as ratepayers and it is up to us to insist that the local authorities use the permissive powers that have been given to them. For of what use is faith without deeds?

Suggestions for Further Reading

A History of the Early English Poor Law. E. M. Leonard.
English Social History. G. M. Trevelyan.
England of Elizabeth. A. L. Rowse.
Guide to the Social Services. Family Welfare Association.
Help for the Handicapped. J. H. Nicholson.
Services for the Disabled. H.M.S.O., 1955.
Social Services in Britain; Health Services in Britain; Rehabilitation and Care of Disabled in Britain. Central Office of Information Reference Pamphlets.
Social Welfare and the Citizen. Pelican Books.
Welfare of the Physically Handicapped since 1957. Central Council for the Care of Cripples.

Statutes:

Disabled Persons (Employment) Acts, 1944 and 1958.
National Health Service Act, 1946.
National Insurance Act, 1946.
National Insurance (Industrial Injuries) Act, 1946.
National Assistance Act, 1948.

"*Investigations of Biochemical Changes in Osteomalacia and Osteoporosis,*" *by* John Anderson
(*continued from p. 9*)

References

Anderson, J. (1955) *J. Physiol.*, **130**, 268.
——— (1956) M.D. Thesis, Durham University.
Bauer, G. C. H., Carlsson, A., and Lonquist, B. (1957) *Acta med. scand.*, **158**, 143.
Carttar, M. S., McLean, F. C., and Urist, M. R. (1950) *Amer. J. Path.*, **26**, 307.
Chu, F. T., and Sung, C. (1940) *J. Pediat.*, **16**, 607.
Crawford, J., Gribetz, D., Diner, W. C., Hurst, P., and Castleman, B. (1957) *Endocrinology*, **61**, 59.
Cruickshank, E. M., and Kodicek, E. (1953) *Biochem. J.*, **54**, 337.
Harris, L. J., and Innes, J. R. M. (1931) Ibid., **25**, 367.
Hyde, R. D., Vaughan Jones, R., McSwiney, R. R., and Prunty, F. T. G. (1960) *Lancet*, **1**, 250.
Kyle, L. H., Schaaf, M., and Erdman, L. A. (1954) *J. Lab. clin. Med.*, **43**, 123.
Lloyd, H. M., and Rose, G. A. (1958) *Lancet*, **2**, 1258.
Nassim, J. R., Saville, P. D., and Mulligan, L. (1956) *Clin. Sci.*, **15**, 367.
Nicholaysen, R., Egg-Larsen, N., and Malm, O. J. (1953) *Physiol. Rev.*, **33**, 424.
Nordin, B. E. C. (1959) *Lancet*, **2**, 1090.
——— and Fraser, R. (1956) Ibid., **1**, 823.
Philpot, G. R. (1958) Ph.D. Thesis, University of London.
Rose, G. A. (1957) *Clin. Chem. acta*, **2**, 227.
Schilling, A., and Laszlo, D. (1951) *Proc. Soc. exp. Biol. (N.Y.)*, **78**, 286.

THIRD INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE

THE Third International Congress met in Washington from August 21 to 26, 1960, the sessions being held at the Mayflower Hotel in that city.

The opening ceremony took place on Monday, August 22, in the Departmental Auditorium in Constitution Avenue, when addresses were given by Dr. F. H. KRUSEN, President of the Congress, Dr. S. CLEMMESEN, President of the International Federation, and the Hon. A. S. FLEMING, Secretary, U.S. Department of Health, Welfare and Education. Music was provided by the United States Marine Corps Band.

SCIENTIFIC PROCEEDINGS

The afternoon of August 22 was devoted to electromyography. Dr. P. BAUWENS gave the tenth John Stanley Coulter Memorial lecture, being the first non-American to be so honoured. He delivered a brilliant address on modern concepts in electrodiagnosis, entitling his lecture, "Electrodiagnosis Revisited".

Outstanding papers in this session were those of Dr. E. LAMBERT, of the Mayo Clinic, on "Conduction Velocity of Motor Nerves in Neuromuscular Disease", and "Kinesiology Studies of the Hand using Electromyography" by Dr. CHARLES LONG, of Cleveland, Ohio. Dr. Long demonstrated beautifully the independence of the lumbricals and interossei in various movements of the hand and drew attention to the different patterns of muscle activity in different people. During the same afternoon, sessions on education and balneology were also held.

The main session on Tuesday morning, August 23, was on arthritis. Dr. E. W. LOWMAN, of New York, gave the leading paper on "Recent Progress in the Collagen Diseases". This was an excellent review of the nature of collagen tissue and modern theories of auto-immune reactions.

Dr. R. HARRIS spoke on the effect of short-wave diathermy on radioactive sodium clearance from the knee-joint in normal subjects and in patients with rheumatoid arthritis, and Dr. R. W. BARTER on non-articular rheumatism. Concurrently sessions on physical methods and electromyography were held. Dr. J. ROGOFF reviewed critical factors in electromyographic instrumentation, and Dr. W. J. LA JOIE, of Arizona, described the clinical and electromyographic features of paramyotonia congenita. Professor N. M. LIVENCEV, of Leningrad, read a paper on electrodiagnosis, and concluded that the faradic-galvanic test was of proved value. During the afternoon, sessions on scoliosis (in which Dr. A. STODDARD read a paper on intervertebral joint sprains), disease of muscle, and arthritis were held. Of particular interest were B. S. STRANDBERG and N. V. JARLOV'S paper discussing the differential diagnosis of cancer arthritis and rheumatoid arthritis, and E. D. HENDERSON and P. R. LIPSCOMB'S report on surgery of the rheumatoid hand.

On Wednesday, August 24, sessions on neuromuscular diseases and balneology were held. Dr. G. GINGRAS reviewed the measures taken to deal with the 10,000 victims of the outbreak of T.C.O.P. poisoning in Morocco.

On Thursday, August 25, sessions were held in the morning on physiatric care following trauma, the highlight of which was the demonstration with film, by E. C.

ELKINS, P. R. LIPSCOMB, and E. D. HENDERSON of the Mayo Clinic, of the use of simple mechanical aids and surgical reconstruction in quadriplegia. Dr. S. MEAD reviewed six years' experience of proprioceptive techniques in general terms, but without statistics.

During the afternoon Professor A. N. OBROSOV, of Moscow, gave the main address on clinical and physiological principles in the physical therapy of neuromuscular disease, outlining his theory of parabiosis. Later in the afternoon a panel discussion on the role of Government in rehabilitation was held, with Dr. F. H. KRUSEN as moderator. The panel consisted of the Surgeon General of the U.S. Public Health Service; the Hon. JOHN E. FOGARTY, of the House of Representatives; Dr. G. HARLEM, the Minister of Health of Norway; Senator HUMPHREY, of Minnesota; Dr. A. LARSON, President of the American Medical Association; and MARY SWITZER, Director of the Office of Vocational Rehabilitation, Washington, together with your reporter. Concurrently sessions on cerebral palsy, at which Dr. K. TYLER spoke, and physical methods were held.

On Friday, August 26, a session on orthetics and prosthetics was held. This was followed by the closing ceremony, when the Horder lamp was extinguished until the next International Congress in Paris in 1964.

SCIENTIFIC EXHIBITION

Some of the scientific exhibits were outstanding, in particular the electromyograph shown by Dr. P. BAUWENS and Dr. PETER STYLES of St. Thomas's Hospital, which attracted large crowds every day despite the rough handling of the machine in transit. Dr. L. DICKER'S display of stumps in rehabilitation; E. D. HENDERSON'S exhibit of surgery of the rheumatoid hand and A. PAUL'S exhibit on the same subject showing the use of metallic prostheses in the finger-joints; Dr. C. SHIELD'S exhibit of demonstrations by a blind physiotherapist, which won an award; and Dr. J. N. SCHAEFFER'S on polymyositis, were all of a high standard.

During the week many of the members took the opportunity to visit the Walter Reed Hospital and the National Institutes of Health, Bethesda, Maryland.

SOCIAL PROGRAMME

The social events were extremely well organized and very varied. In the evening of Monday, August 22, a reception was held in the Senate Caucus Room, and later a private view for Congress members of the fabulous art collection in the magnificent National Gallery was arranged.

On Tuesday morning the American Treat Breakfast was held. A gargantuan meal comprising such exotic ingredients as scrapple, hominy grits, and blueberry muffins, accompanied by a printed glossary of terms, was thoroughly enjoyed by all. Each guest was presented with a copy of a special book published for the occasion by ELIZABETH LICHT—"The Exercise Book" of Dr. Christobal Medez, first published in 1553 and the first printed book on exercise. A vote of thanks was proposed by Dr. MARCEL PEILLON, in which she described Dr. SIDNEY LICHT, the convener, as the eighth wonder of the world. On Tuesday evening the Congress were guests at the baseball game between the home team—the Washington Senators—and Kansas City. Excitement reached fever pitch when the home team scored the winning points by a home run inside the park (a rare event).

The ladies were guests at a lunch and fashion show on Wednesday, and tours of Washington were arranged for the afternoon. Many of our hosts gave private parties the same evening, and generously extended invitations to overseas visitors. The opportunity to be entertained in American homes and to receive their famed hospitality was much appreciated.

On Thursday, August 25, the Reception and Banquet were held. After a jumbo-sized meal and entertainment by the U.S. Army Chorus, awards to members of the American Academy of Physical Medicine, whose annual dinner was combined with the Congress banquet, were made, and a signal honour by the presentation of the Gold Key of the American Academy was conferred on Dr. P. BAUWENS. A number of speeches followed, including a characteristically witty contribution from the President of the British Association of Physical Medicine, Dr. HUGH BURT, and an address by the President of the American Medical Association on "Ethics and Medicine".

The Congress was undoubtedly a great success, particularly by virtue of the many useful contacts made by individual members and by the discussions and arguments round exhibits, over lunch, and over rye or Scotch late into the night. Many individual papers were of a high standard, though the over-all standard was probably not so high as at the London Congress of 1952.

We are extremely grateful to our hosts, who entertained us so well and made us feel at home in the beautiful capital city of their amazing country.

C. B. WYNN PARRY

EIGHTH WORLD CONGRESS OF THE INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES

MANY of those who attended the Congress of Physical Medicine proceeded to New York for the Eighth World Congress of the International Society for the Welfare of Cripples, now renamed the International Society for Rehabilitation of the Disabled. This was held at the Waldorf Astoria Hotel from August 28 to September 2. Over 3,000 delegates attended, including doctors, therapists, and voluntary workers.

The congress was on a huge scale, and so many sessions competed simultaneously for one's attention that it was impossible to do justice to the fare provided. Outstanding sessions were held on paraplegia, leprosy (at which Dr. Paul Brand demonstrated his ingenious techniques for reconstructive surgery), cerebral palsy, arthritis, orthopaedic disorders, industrial medicine, speech and hearing, and cardiovascular disease. Many sessions of interest to auxiliaries and voluntary workers were held where all branches of the professions concerned with the disabled could meet and discuss mutual problems and ways of combating them.

There were also a large display of exhibits and films, and a characteristically varied social programme, including an evening river cruise, receptions and parties, and a banquet with dancing and a concert by a blind American pianist.

One of the highlights for physical medicine specialists was a visit to the Hospital for Special Surgery, where papers on the following were read: a ten-year follow-up of steroid treatment in rheumatoid arthritis; surgery of the arthritic hand; serology in rheumatoid arthritis; pathological fractures in osteoporosis and osteomalacia; arthrodesis in hip disease; and quadricepsplasty for the stiff knee.

The published proceedings of this congress should be well worth study and the Society deserves high praise for organizing such a meeting. The International Society for Rehabilitation of the Disabled deserves wider support from the medical profession and particularly from specialists in physical medicine.

C. B. WYNN PARRY

BRITISH ASSOCIATION OF PHYSICAL MEDICINE

1960 PROVINCIAL MEETING

THE 1960 Provincial Meeting of the Association was held at the Royal Sussex County Hospital, Brighton, on October 8, with the President, Dr. H. A. BURT, in the chair.

DEMONSTRATION OF CASES

In the morning Dr. R. W. WINDLE presented a number of cases.

The first was a case of rheumatoid arthritis of 31 years' duration in a man aged 54 years. Spontaneous fractures of the left tibia and fibula had occurred in April, 1959. Bony union followed with rest in bed, and the patient was able to return to work in four months.

The second case was that of a woman of 47 with gross swelling of the right thigh and leg which had been present since childhood. Originally this was considered to be a case of congenital lymphoedema, but biopsy revealed diffuse lipomatosis as the cause of the swelling.

Case 3 was that of a man of 51 who developed an illness with the following features: dyspnoea, pyrexia with rigors, anaemia, purpura, splenomegaly, and marked leucopenia. Radiography of the chest revealed miliary reticulo-nodular shadowing. A Mantoux test was positive. Treatment with tetracycline was initiated, but the fever was controlled only when this was combined with steroids, prednisolone and triamcinolone being used. Later walking became difficult and gross wasting of the gluteal and thigh muscles developed. Radiography revealed destruction of the femoral heads and much rarefaction of bone.

In the discussion on this case Dr. A. T. RICHARDSON suggested that the wasting of the gluteal and thigh muscles, which was severe, might be due to triamcinolone myopathy. Dr. R. M. MASON thought that the X-ray appearances of the hip-joints suggested steroid arthropathy. Dr. R. GREENWOOD considered that the chest X-ray appearances were those of sarcoidosis, and Dr. D. WILSON agreed with this suggestion, commenting that sarcoidosis, together with steroid arthropathy, would account for the clinical picture. Dr. A. C. BOYLE, however, thought that disseminated lupus erythematosus would account for most of the symptoms and signs. Dr. K. N. LLOYD and Dr. A. T. RICHARDSON shared this view, but felt that the fact that disseminated lupus erythematosus was unusual in males presented some difficulty.

The fourth case was one of osteopoikilosis in a woman aged 27, in which the changes in the bones were revealed when the patient was X-rayed for a painful shoulder.

In Case 5, of scleroderma in a woman aged 73, the condition caused stiffness in the legs, but there was also some involvement of chest and arms. Answering Dr. R. W. WINDLE, who invited comments on the use of steroids in scleroderma, Dr. A. T. RICHARDSON thought that the condition here was a rather diffuse form of morphoea and that steroids would not help. Dr. R. DANBURY wondered whether this was a case of dermatomyositis, but both Dr. WINDLE and Dr. RICHARDSON considered that in the absence of muscle weakness this was unlikely.

The last case to be shown was that of a man aged 55 in whom spastic paralysis of the legs had occurred immediately after an operation for arthrodesis of the hip. Two months later he developed weakness in the arms associated with absent tendon reflexes,

and also symptoms and signs pointing to a brain-stem lesion. Dr. A. T. RICHARDSON thought that the diffuse signs made it likely that metastases were responsible. Dr. M. F. HART said that fat embolism should be considered, but Dr. R. GREENWOOD thought vascular episodes a more likely explanation, as the patient had severe hypertension. Dr. P. H. KENDALL considered that, in view of the electromyographic findings and the strength–duration curves of the paralysed muscles, there must be a peripheral lesion as well. Dr. D. G. C. BURRY suggested that syringomyelia and syringobulbia complicated by haematomyelia might be responsible.

SHORT PAPERS

In the afternoon short papers were read by members of the staff of the Royal Sussex County Hospital.

Mr. J. C. F. LLOYD WILLIAMSON spoke on "Chronic Tenosynovitis of the Extensors of the Hand and Fingers". He pointed out that chronic tenosynovitis affecting the flexor sheath in front of the wrist is frequently found to be tuberculous, but that in cases of tenosynovitis affecting the extensor tendon sheaths evidence of tuberculosis is often lacking. He was convinced, however, that many cases of chronic tenosynovitis of the extensors were in fact tuberculous. The operative findings were described and illustrated in colour by lantern slides. Histological examination of material removed at operation revealed chronic inflammatory changes, the tissue being infiltrated with lymphocytes and to a lesser extent plasma cells. Acid-fast bacilli were not found, and guinea-pig inoculation was negative. The author considered that removal of affected tissue combined with antituberculous drugs was the most promising line of treatment.

Mr. F. L. DAVIES read a paper on "Laminectomy in the Treatment of Cervical Spondylosis". In cervical spondylosis with myelopathy he thought conservative treatment should be given an adequate trial—that is, at least six months—unless progressive deterioration occurred, in which case surgery is indicated. The usual operation is decompression of the theca and spinal cord by formal laminectomy. If there is subluxation of a cervical vertebra or instability following laminectomy, fixation can be obtained by a posterior bone graft, but some surgeons advise fusion by the anterior route. Of the six cases operated on by the author, five were much improved and one unchanged or worse. He compared these results with those of other surgeons. The indications for operation in cervical spondylosis with brachial neuritis are as follows: (1) failure of at least 12 weeks' conservative treatment; (2) if the symptoms are exceptionally severe; (3) recurrent attacks (three or four within 12 months); (4) severe motor weakness and paralysis.

Dr. C. E. QUIN read a paper entitled "The Carpal Tunnel Syndrome: Treatment by Splinting". A total of 47 patients were treated by splinting of the wrist on the most severely affected side. They were advised to wear the splint at night. Of the 47 patients, 28 improved, 16 were unchanged, and 3 were worse after wearing the splint for one week. The patients were kept under observation for periods up to one year. A natural remission occurred in 12 patients, 12 were able to manage well with the splint alone, but 19 were given hydrocortisone injections into the carpal tunnel, either because splinting had failed or in the hope that it would enable them to manage without the splint. After the injection 13 patients improved and 6 had no benefit. Unfortunately, most of the patients who improved after the injection relapsed within a few weeks. Twelve patients were referred for operation.

Mr. P. G. SOMERVILLE spoke on "Operative Procedures to Improve Circulatory Defects which Interfere with Locomotion". He drew attention to two groups of patients: in the first those with claudication, and in the second those with peripheral ischaemia, whose symptoms may be coldness and numbness of the feet, later passing on to rest pain and finally to gangrene. Lumbar sympathectomy can double the resting peripheral blood flow, but, as exercise demands a seven- to ten-fold increase, the operation is valueless for claudication. In peripheral ischaemia lumbar sympathectomy gives the best results in cases with coldness and numbness of the foot, but it is occasionally helpful in those with rest pain. Where there is a short block in an artery, especially in the iliac vessels, the operation of disobliteration can re-establish a good pulsating flow in the leg. A second method of obtaining a good pulsating flow is by arterial replacement. In the early days transplanting a homograft taken from the post-mortem room was the method of choice, and it is still widely used, but latterly there has been a definite change towards a synthetic prosthesis such as orlon or teflon. The commonest type of graft is from the common femoral to the popliteal artery, by-passing the superficial femoral block. The key point for success is whether the popliteal artery is good enough to take the graft.

Dr. E. MILLINGTON read a paper on "The Selection of Rheumatic Cases Suitable for Radiotherapy". Cases considered suitable for radiotherapy are those characterized by a failing blood-supply to a localized area such as occurs in osteoarthritis, and it is this condition in which X-ray therapy is most often successful. Good results of radiotherapy may also be obtained in lesions of the cervical or lumbar spine and in arthritis of the hips and knees, but arthritis in the upper limbs is usually unresponsive to this form of treatment. Spondylitis ankylopoietica is generally treated with X rays with excellent results. Radiotherapy usually has no effect in rheumatoid arthritis, but non-articular conditions often respond well.

SOCIAL PROGRAMME

A social programme was arranged for the ladies during the day, and included visits to the Royal Pavilion, Brighton, and to Michelham Priory, near Hailsham. In the evening there was a cocktail party, followed by dinner at the Old Ship Hotel, Brighton.

C. E. QUIN

BINDING OF VOLUMES

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REVIEWS OF BOOKS

OCCUPATIONAL THERAPY IN REHABILITATION. Edited by E. M. Macdonald. *Pp. 348. 37s. 6d. London: Baillière, Tindall and Cox. 1960.*

This book has 24 contributors. In 23 chapters they deal with the historical background to present-day occupational therapy, the organization of occupational therapy departments, the examination and assessment of patients, and the detailed treatment of a wide variety of physical and mental disorders. With so many contributors it is difficult to review the book fairly and at the same time critically, for it is obviously based on personal experience, and incorporates a good deal which is practical and sound common sense. As there are so many contributors repetition is inevitable, and the book would be more readable if it were much shorter.

I was surprised to find almost no mention of aids for the disabled in a book with this title, and I could find no description of kitchen, bathroom, or toilet adapted for the use of patients with disabilities. Surely these are important aspects of occupational therapy? On the other hand, certain statements are made in this book which must be challenged. Is it really the task of the occupational therapist to make a detailed examination of the limbs and trunk of patients referred to the occupational therapy department, as detailed on pages 48–51, or to "ascertain from the medical officer and by the study of the medical history, X-rays, etc., how much recovery may be made in the range of movement" of stiff joints? Is the occupational therapist to interpret the E.C.G. and electromyogram too? Moreover, the industrial resettlement of disabled workers is the province of the almoner and disablement resettlement officer. Occupational therapists can certainly assist in assessing the mental and physical capabilities of their patients, but industrial assessment and placing should be left to the Ministry of Labour. Surely instruction in walking, whether with crutches or with artificial limbs, must be left to the physiotherapist or remedial gymnast, for patients will only become confused if they receive instruction in different departments.

I am certain that occupational therapists will find much of value in this book, but they should read it critically. I doubt whether it will attract the interest of doctors or other people interested in the problems of rehabilitation, which is a pity.

S. MATTINGLY

PRINCIPLES OF BONE X-RAY DIAGNOSIS. By George Simon. *Pp. 170. 57s. 6d. London: Butterworth. 1960.*

This book contains a wealth of information about the radiological appearances of diseased bone. It is unusual in that the material is grouped according to the type of X-ray shadow and not classified by diseases. There are chapters dealing with alterations in bone shape and density, new bone, calcification in soft tissues, and alterations in bone architecture, including "cystic changes" and joint disease. The radiographs are well reproduced and, as each chapter is short and conveniently subdivided into sections, the text is very readable. The index appears to be adequate.

The specialist in diseases affecting the locomotor system will be disappointed by the small number of radiographs illustrating such common conditions as osteoarthritis, ankylosing spondylitis, and gout, and it is unfortunate that radiographs of the skull could not be reproduced because of technical difficulties. However, this is not intended as a complete catalogue of X-ray appearances of bone and joint disease. The author has

set out to illustrate the principles of bone X-ray diagnosis, and as a guide, rather than a textbook, this book can certainly be recommended to specialists in physical medicine and to those studying for the Diploma.

S. MATTINGLY

PROCEEDINGS OF THE SECOND INTERNATIONAL CONFERENCE ON MEDICAL ELECTRONICS, PARIS, 1959. *Pp. xxiii+614. 145s. net. Published for the International Federation for Medical Electronics.*

This report of the second International Conference contains sections on all aspects of electronics in medicine, including electroencephalography, cardiology, manometry, acoustic techniques, automation in medicine, radiology and isotopes, and chemical instrumentation. The section of most interest to readers of the *Annals* will be that on electrophysiological techniques. There are several papers of particular interest on amplifiers, integrators, and recording systems concerned with electromyography.

Perhaps the most important contribution for physical medicine specialists is Montgomery and Stephenson's account of a technique for picking up muscle-action potentials by surface electrodes and using their energy to control artificial respiration and prosthetic devices. Tolles and Carbery's paper on measurement of skin resistance and the papers on eye-movement recorders are also worth study.

Two other papers are particularly intriguing—one describes an automatic prescreening device to facilitate diagnosis of cancer, and the other, by Lusted and Ledley, an electronic computer to aid medical diagnosis.

This is a highly specialized book, beautifully produced with papers of a very high standard, and indicates the importance of electronics in medicine to-day.

C. B. WYNN PARRY

ABSTRACTS OF THE LITERATURE

Spinal Reflex Mechanisms Concerned with Skeletal Muscle. C. C. HUNT and E. R. PERL. *Physiol. Rev.*, 1960, **40**, 538.

This is a long and comprehensive review of the present state of knowledge of spinal mechanisms of reflex irritation and control of movement. Based mainly on recent investigations on cats, it is a critical appraisal suggesting further research, and is strongly recommended to be read by all interested in control of voluntary muscle.

C. B. WYNN PARRY

Experience with Punch Biopsy of Synovium in the Study of Joint Disease. G. P. RODNAN, E. J. YUNIS, and R. TOTTEN. *Ann. intern. Med.*, 1960, **53**, 319.

A total of 142 biopsies of either knee or suprapatellar synovial membrane were made from patients with clinical joint disease, using the punch biopsy of Polley and Bickel as a closed procedure. There were four failures. The histological changes of the remaining biopsies were classified into normal (which included the normal ageing processes—separately assessed from 75 necropsy biopsies of synovial membrane in patients clinically free from joint disease); non-specific synovitis; questionable rheumatoid arthritis; rheumatoid arthritis; scleroderma; gout; and Charcot's neuroarthropathy. The value of biopsy in each of the clinical conditions was assessed, and the impossibility of histological differentiation between the synovial changes of rheumatoid arthritis, disseminated lupus erythematosus, and psoriatic arthritis is stressed.

The authors consider this a simple, safe, and useful addition to the methods used for investigating joint disease.

J. M. EVANS

The Rate of Calcium Turnover in Bone. Measurement by a Tracer Test using Stable Strontium. R. FRASER, M. HARRISON, and K. IBBERTSON. *Quart. J. Med.*, 1960, **29**, 85.

A new method of assessing deposition of calcium in bone is described involving the intravenous injection of strontium, which both chemically resembles calcium and is deposited in bone crystals by the same process. Accurate assessment by means of a flame photometer is made of serum and urinary concentrations of strontium for the following six days, and both the rate of calcium deposition in bone and the total exchangeable mass of calcium are calculated.

Normal values from 15 controls were obtained, and the value of the test was assessed in (1) hypercalcaemia, all nine cases of primary hyperparathyroidism showing increased deposition as opposed to normal results in hypercalcaemia due to other causes; and (2) osteomalacia, where 16 out of 17 cases showed increased deposition. The test is recommended in the diagnosis of both these conditions, and also for assessing the effect of treatment on certain bone diseases.

J. M. EVANS

Calcification in Articular Cartilage. G. E. HOSKING and G. CLENNOR. *J. Bone Jt Surg.*, 1960, **42B**, 530.

A case of calcification of articular cartilage in association with a parathyroid tumour is described. Radiographs revealed no evidence of bone disease, but several joints showed calcification in the articular cartilage or joint capsule. There was no previous history of joint pain, swelling, or stiffness, nor any bone pain. Previously reported cases of articular calcification are briefly discussed, and it is recommended that patients with articular calcification of undetermined cause should be investigated for hyperparathyroidism.

JOYCE J. P. LOMAS

Excision of the Trapezium in Osteoarthritis of the First Carpometacarpal Joint. A. H. G. MURLEY. *J. Bone Jt Surg.*, **42B**, 502.

Excision of the trapezium was performed on 39 occasions in 34 patients. Clinical and radiological assessment was made one to nine years after the operation.

For most patients with this condition, who are usually middle-aged women, excision of the trapezium produces satisfactory relief of pain. The grip is usually permanently reduced by an appreciable amount, but functional power is improved by the absence of pain. It is suggested that the indications for operation should be incapacitating pain in the joint with use, a lesser degree of pain at rest, and weakness of grip caused by pain, conservative measures such as physiotherapy and splinting having failed to produce an adequate remission of symptoms.

JOYCE J. P. LOMAS

Haemophilia and Haemophilic Arthropathy. J. B. WEBB and A. ST.J. DIXON. *Ann. rheum. Dis.*, 1960, **19**, 143.

After an interesting review of the historical aspects of haemophilia and arthropathy, the authors describe the clinical findings in 42 cases of haemophilia examined by them out of 77 known haemophiliacs living in London and the Home Counties. Of the 42 patients, 28 gave a history of haemarthroses and 23 had permanent joint deformities, large and medium joints being particularly involved.

The pathogenesis of chronic joint changes is discussed and the typical radiological changes are described.

MAURICE F. HART

Discussion on the Acquired Myopathies. Clinical Aspects: W. RUSSELL BRAIN. Electromyographic Aspects: A. T. RICHARDSON. Value of Muscle Biopsy: S. NEVIN. *Proc. roy. Soc. Med.*, 1960, **53**, 821.

Each of these three papers is an important contribution to a difficult and fascinating subject. Sir Russell Brain reviews the classification of myopathies of late onset. Dr. Richardson discusses the criteria for electrodiagnosis of a myopathy and describes the decamethonium test for myasthenia gravis. Dr. Nevin discusses the significance of abnormalities of biopsy material and points out how confusing these studies can be. The symposium is well illustrated, and is strongly recommended to all specialists in physical medicine.

C. B. WYNN PARRY

The Changes in the Motor End-plate in Myasthenia Gravis. V. MACDERMOT. *Brain*, 1960, **83**, 24.

Eight cases of myasthenia gravis were subjected to muscle biopsy, intravital staining techniques being used. The muscles were not clinically affected, nor was there any abnormality noted by conventional histological techniques. Electromyograms were normal, but the decamethonium test was positive. In all cases methylene-blue stains showed striking abnormality of the distal nerve fibres and motor end-plates.

Both this paper and that of Bickerstaff and Woolf (see next abstract) adduce important evidence that myasthenia gravis has a neural element.

C. B. WYNN PARRY

The Intramuscular Nerve Endings in Myasthenia Gravis. E. R. BICKERSTAFF and A. L. WOOLF. *Brain*, 1960, **83**, 10.

The authors have studied muscle biopsies from seven cases of myasthenia gravis, using methylene-blue stains and histochemical demonstration of cholinesterase in the subneural apparatus of the end-plates.

Two main abnormalities were found—elongated or multiple end-plates and collateral axonic sprouts. The elongation of the end-plate seems to the authors to be characteristic of myasthenia gravis.

C. B. WYNN PARRY

The "Stiff Man Syndrome" in a Boy. D. BOWLER. *Arch. Dis. Childh.*, 1960, **35**, 289.

A case of progressive fluctuating muscular rigidity and spasm in a Chinese boy of 7 years is described. Other reported cases, including that of Price and Allott, are also described and the differential diagnosis is discussed.

MAURICE F. HART

Sickness Absence among Forestry Workers in the North of Scotland, 1958. D. MCGREGOR. *Brit. J. industr. Med.*, 1960, **17**, 310.

The sickness absence records of 1,115 forestry workers in the Highlands of Scotland during 1958 were examined, only absences of four days or more being considered. The number of established workers (i.e., entitled to a retirement pension) was 270. There was a high proportion of older men among the established workers, but the sickness record of these men was generally better than that of the unestablished workers, except in respect of cardiovascular disease, rheumatism, and arthritis. Amongst forestry workers as a whole accidents off duty accounted for more sickness absence than accidents on duty—a reversal of the findings among the male working population at large. Open wounds, strains, and contusions, in that order, were commonest with accidents at work, whereas sprains and strains were more common in off-duty accidents. The second commonest cause of sickness absence was back troubles of all kinds. Increasing age was found to be an important factor in the syndrome of back trouble.

HENRY BLAIR

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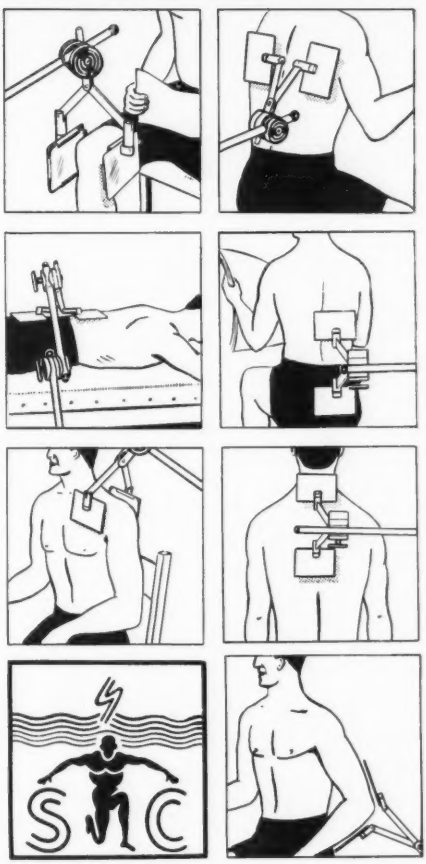

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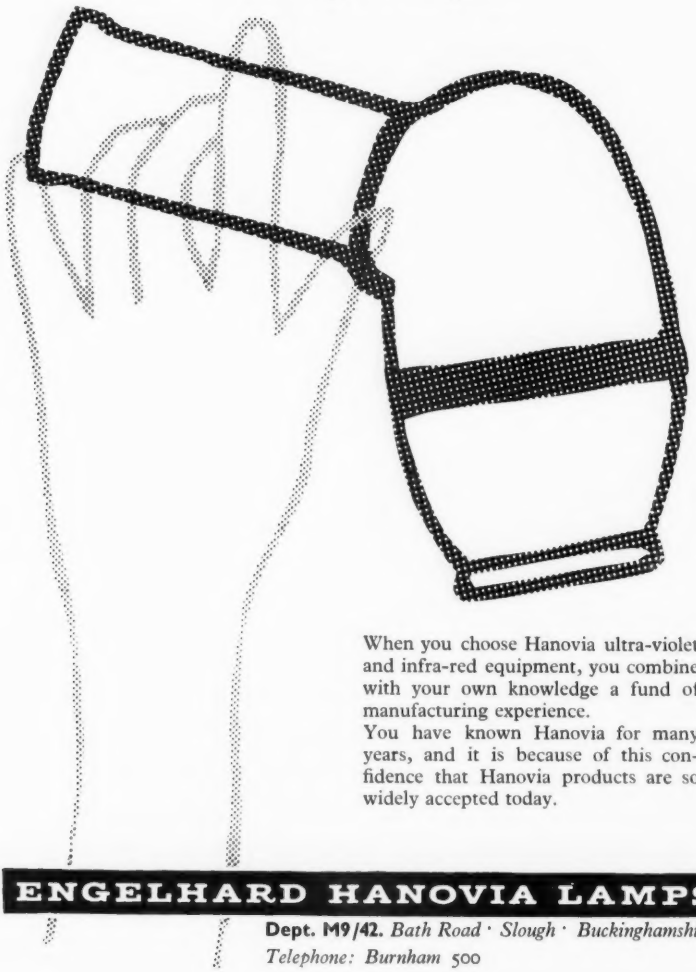

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